THE AUTOMOBILE

WEEKLY NEW YORK—THURSDAY, JUNE 27, 1907—CHICAGO 10 CENTS

WINTON

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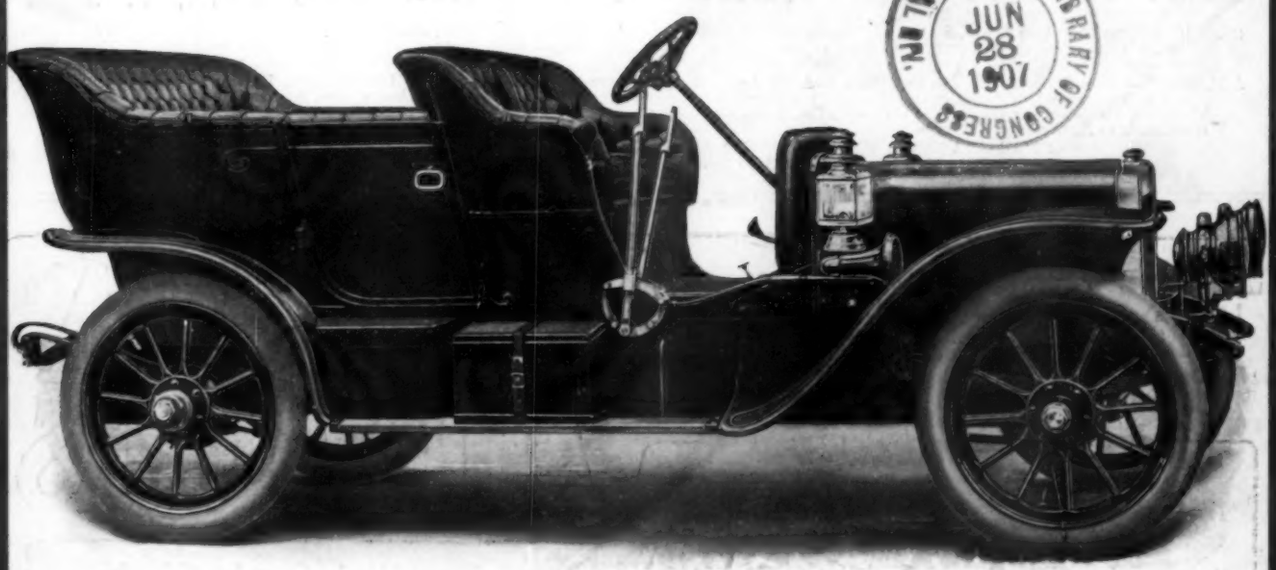

Three Perfect Scores

The Winton Model M made Perfect Scores in The New Jersey Automobile Club's Three-Day Endurance Test. The Long Island Automobile Club's Endurance Test (original run). The Long Island Automobile Club's Endurance Test (run-over: only perfect-score cars allowed to compete).

The report on the New Jersey Test is as follows:

"Model M Winton, C. S. Calvert the nominated driver, made a perfect score. This car had run more than 4,000 miles prior to contest, and was used for demonstrating purposes up to the last minute before start of contest. No expense involved in preparing car for test. Car stopped only at controls. Engine was cranked but twice in three days—once at start of test, and once at noon-control. After standing all night, engine started on the spark."

That's real endurance and reliability—the kind that keeps down repair bills and makes motoring enjoyable for the man who purchases a car.

40 H.P., Model M, $3,500. 30 H.P., Type X-I-V, $2,500. In runabout bodies at the same prices. Limousines $1000 higher. Write for details of landaulets and physician's coupes.

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Member A. L. A. M.

CLEVELAND, OHIO, U. S. A.

We conduct our own branch houses in New York, Boston, Philadelphia, Pittsburg, Detroit, Chicago, Seattle and London.

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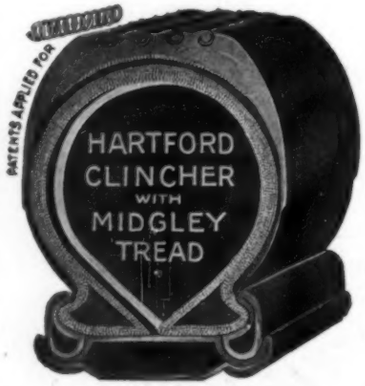

So says Herbert Lytle who has put

Hartford Midgley Tread Tires

CLINCHER OR DUNLOP

to every conceivable test. "I put a set of Hartford Midgley Tread Clincher Tires on my demonstrator at the Chicago Show in February; have run them 4,440 miles since. They have the same air I put in them at Chicago, and look as though they were good for another 4,000 miles. They are absolutely non-skid, fast and resilient, and I believe practically puncture-proof. I shall use them on my future racing cars." **Mr. Dealer, tell your customer to put Hartford Midgley Tread Tires on his car.** Tell him too, to insist on Midgley Universal Rims. He can then use either Clincher or Quick Detachable Tires at his option. Write for Booklet.

THE HARTFORD RUBBER WORKS CO., HARTFORD, CONN., U. S. A.

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8 Day High Grade Clocks

"BEST in the WORLD"

Clocks built with a view to stand the jars and jolts and rough riding of Automobiles. Reputation the highest.

The "SPECIAL" Grades viz: (Design of case patented Dec. 19, 1905.)
- 2¾ in. "SPECIAL" Auto Clock, $26
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- 3½ in. "SPECIAL" Motor Clock, $41

In "Round" Cases.
- 2¾ in. Auto Clock, $26
- 3¼ in. " " 28
- 3½ in. Motor Clock, 24

YOU Own a Good Motor Car?
BUY THE BEST CLOCK.

The sizes are the approximate diameter of the Dials. All are in Duplex (patent applied for) Polished Cast Brass Cases, the most thoroughly waterproof case on the market. The "Specials" show dial on angle; its clock when removed from outer (locked) case is excellent for use on mantels, bureaus, etc. Outer case secured to dashboard by hidden screws. The 3 1-2 inch motor clock is a strong, reliable clock, but the auto clocks have a somewhat finer train. You want the BEST? Ask for the "CHELSEA."

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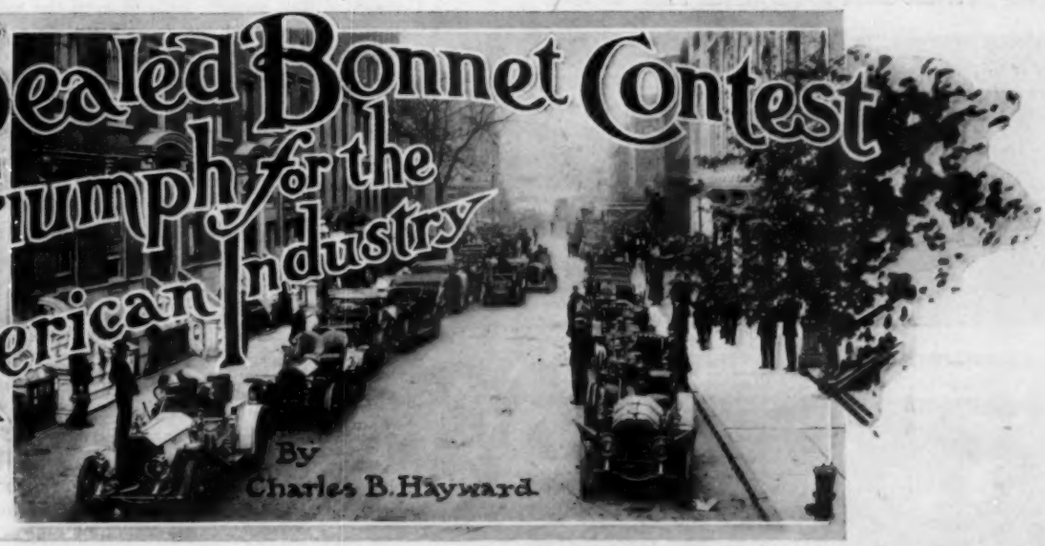
THE AUTOMOBILE

Sealed Bonnet Contest a Triumph for the American Industry



By Charles B. Hayward

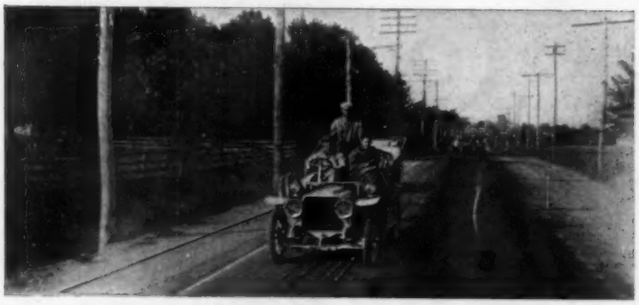
IF some enterprising jewelry house had sent a salesman to the Contest Committee of the Automobile Club of America any time after last Thursday night there is little doubt but what he would have been given the glad hand, to put it in the vernacular. Wednesday had been a clean-score day for every one of the forty-seven contestants in the club's sealed bonnet contest and Thursday had destroyed the chances of so very few that it looked as if the club would have to go into the wholesale jewelry business in order to supply the demand for the promised cups, but Chairman Morrell said that the prizes would be forthcoming even if it were necessary to put a second mortgage on the clubhouse.

Of the forty-eight entrants but one failed to start, Percy Owen's Bianchi, which was to have been driven by G. Combet; unfortunately, the car had been sold and the purchaser wished immediate delivery, otherwise there would have been a full field. The arrangements were perfect and all the cars were sent away promptly within a few minutes after 8 A. M. Wednesday, and they were as promptly dispatched by the official starter at Newtown. True to tradition, the run started off as a race and, with the exception of a few of the more conservative drivers who outlined the schedule right from the start and stuck to it consistently, it was a case of get there as fast as you can and the devil take the hindmost, which meant a diet of dust for the whole seventy-five miles. There was quite a different story to tell on the way back, for those who had made up time in the morning had to lose it in the afternoon or be penalized for arriving too early. I rode in the De Luxe and we had things figured down so fine that even the photographer's time was recorded.

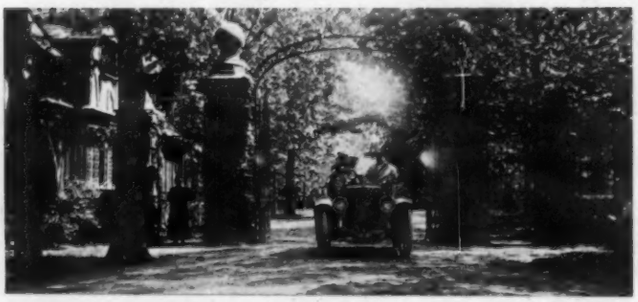
This practically tells the story of the first day's run; the cars dawdled so on the last lap of the run that they weren't going fast enough to kick up any dust. It made the farmers take notice to see automobiles going so slowly, and other drivers along the

STARTER WAGNER DISPATCHING THE CARS FROM NEWTOWN FOR PATCHOGUE THE FIRST DAY.

TYPICAL DAILY SCENE AT THE STARTING LINE.



ROLLING ALONG AN OILED STRETCH OF THE PIKE.



A SOUTH ROAD SCENE—W. K. VANDERBILT, JR.'S, ESTATE.

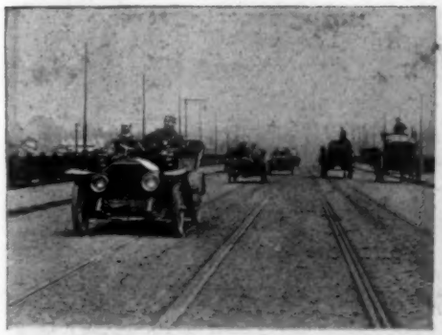
THE LINE UP FOR DINNER AT PATCHOGUE, LONG ISLAND.

SENDING THE CARS AWAY FROM CENTRAL BRIDGE, NEW YORK.

road were at a loss to make out what kind of a slow race the contest might be. At the end of the first day's run it looked as if the club was in for cups pretty heavily, for the only contestant who failed to report early was S. B. Stevens with his 20-horsepower Darracq runabout, and as tire troubles were his only misfortune he was not disqualified. The first day's run was only a sort of introduction, the route for the second installment of 150 miles having been selected more with a view to trying the powers of the cars, as there is a choice collection of hills between here and Danbury, Conn., by way of Kensico, Bedford and the other towns on that line. But the cars simply ate them up alive, to impress the Coney Island barker's yell; the 45-horsepower Pierce with J. S. Williams at the wheel, in which I rode the second day, making light of even the worst ones on the high, and that in spite of the fact that they are such twisters as to give little opportunity of rushing them. Despite the severe nature of the second day's run the result at the end of 300 miles must certainly have been a large surprise for the committee, the Columbia 45-horsepower gasoline-electric touring car, driven by C. F. Barrett, being retired with a broken valve spring. B. F. Dawson's Stoddard-Dayton runabout, driven by R. Howard, also lost its number through the necessity of putting a nut on the steering gear, which as a matter of fact had simply been overlooked and should have been there before the car started out.

It looked for a time as if others would fall by the wayside, through no fault of their own, however. Considerable pains had been taken in studying the route, and men with green flags were posted wherever there was any opportunity of being trapped by the over-zealous constable. But those at Newcastle Corners thought they ought to have some of the money in spite of this, and they roped in three cars willy-nilly. These were the Maxwell and Mora touring cars, driven by F. Offenhauser and W. Stickney, respectively, and the Mora runabout, with F. Cimiotti at the wheel. There was a warm pow-wow, and Stickney took advantage of the opportunity to let in his clutch and slide off, much to the chagrin of the upholders of the law. The J. P., right at hand, said "ten dollars" in the case of the other two, but Mr. Cimiotti protested so strenuously, backing up his argument by the observer's time book, that the heart of the court was softened and remitted the ten. The Maxwell driver was not so fortunate and had to pay under protest. Recognizing the circumstances the committee let it be known that these cars would not be disqualified under the rules to that effect. This left forty-five of the original forty-seven still in the running on Thursday night though the Pope-Toledo, driven by Joe Judge, was protested owing to having used pliers on its accelerator pedal. Thursday was a bad day for the Glide, driven by J. C. McCafferty, who not only had tire troubles, but also broke a detachable rim about twenty miles this side of Danbury and lost two hours while waiting for a new one, in spite of which he turned up on schedule time.

Friday was another easy day for practically all the cars and made the committee opens its eyes a little wider, as the 150-mile run which brought the total to 450 miles only served to eliminate one competitor through a most trivial defect. This was the De Luxe touring car, driven by C. S. Beach; when only fifteen miles out a primary short-circuit ended the car's chances, though it continued and even served the next day without mishap as a press car, completing its services by towing in the Welch. The third day's run was along the shore road to Westhaven, just outside of New Haven, the running time being taken from Central Bridge. The first car to report at the clubhouse Friday night was the Locomobile, driven by J. Florida, carrying the number 9-B, which by that time had become quite familiar to all contestants, as the driver with the state name was always met well on his way back long before the end of the line had reached the turning point. How closely the cars simulated clockwork in their movements is evident from the way they reported at this, the end of the third day's run, completing 450 miles. Florida's Locomobile reported at 4:48, followed by W. Folberth's Oldsmobile at 4:59, with the Stoddard-Dayton tour-



TRIUMPHANT RETURN OF THIRD DAY'S RUN.

LUNCH ACCOMMODATIONS.

A STOP ON SHORE-ROAD, THIRD DAY'S RUN.

ing car one minute later; then came another Locomobile with T. Beck at the wheel. After that they came too fast to count, and all except the Glide, which had again been held up by tire trouble, came in as close to the schedule as if they had been limited railroad trains.

This left forty-three cars running as well as ever to compete against the chance of some minor ailment under their bonnets on the last 150 miles of the 600. The Glide accounted for the missing one, having been compelled to raise its bonnet to make repairs to a broken wire. It was hardly thought possible that the Long Island run would serve to cut the list down any. I took this day's run in the big Matheson, handled by Frank Lescault. The Matheson went like clockwork and Lescault kept the speedometer hand glued to the 18-mile mark, except when it was necessary to accelerate a bit to get over a rise on the high or when he got tired of taking all the dust of the man ahead. Beach, who drove the De Luxe, Williams, of the Pierce forces, and Lescault in the Matheson were models of propriety in driving; certainly not even the most zealous upholder of an arbitrary speed limit could find any fault with their traveling, though we were held up in the big Pierce on Friday by one of the city's bicycle cops on the Pelham parkway. He graciously let us off, however, on the ground that the Pierce was carrying a 14-A; if it had been 13 it would have been all off.

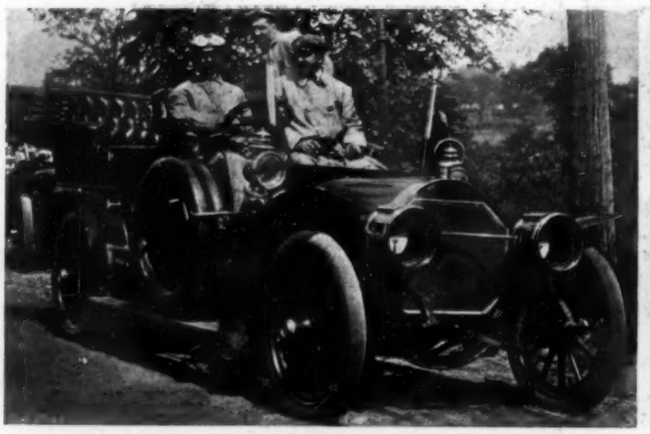
SECRETARY BUTLER—A WORKER.

On the way back the story was about the same. The others figured out their times to a dot, so as to bring them in within a minute or two of the minimum. And each one started off on his own hook when it best suited his convenience, so that it was seldom that more than one or two cars were to be seen together at any point along the road. We were one of the exceptions, the Deere runabout, driven by A. F. Camacho, having broken its speedometer gear and sticking to us as a pilot, as the finishing times of the two cars were but two minutes apart. The performance of the Deere runabout was considerable of a surprise, as it was known to be an old car that had been given no special overhauling preparatory to entering the run. The Welch was also an old car, and the fact that it lasted to within a few miles of the finish of the last day's run was little short of a marvel. It finally came to grief on Roslyn Hill, when three-fourths of the way up, and it is an open question whether it was really the driver's fault and whether the car would really have been able to cross the finish line a winner had a little more foresight been exercised in providing for replenishing the oil supply of the gear case. As it was, its performance was certainly most creditable, and no one who saw it the first day so much as counted it in the running at all where finishing was concerned. Beach in the De Luxe played the good Samaritan and handed out a tow line.

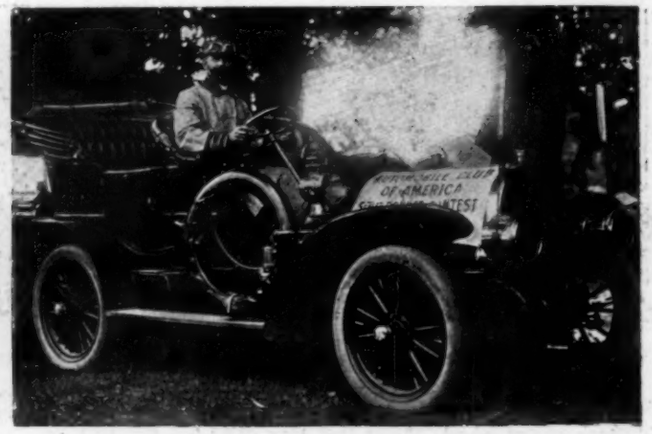
The only other competitor to fall by the wayside on this, the last day of the run, was S. B. Stevens in his 20-horsepower Darracq runabout, which came to grief with a broken camshaft, thus making the average number of eliminations one and a fraction per day for the four days of the run, while the sum total of the troubles encountered was almost a negligible quantity, omitting one or two exceptions. This left forty-one cars to roll home promptly within the eight-hour schedule and forty-one of those expensive cups for the Automobile Club of America to purchase and have suitably engraved with the record of this most consistent of endurance tests that has ever been held.

SOME GOOD GOING ON THE SECOND INSTALLMENT.

ROUND-UP OF THE HUNGRY ONES AT MAPLEWOOD.



MORRELL AND RIKER, TWO LEADERS OF THE COMMITTEE.



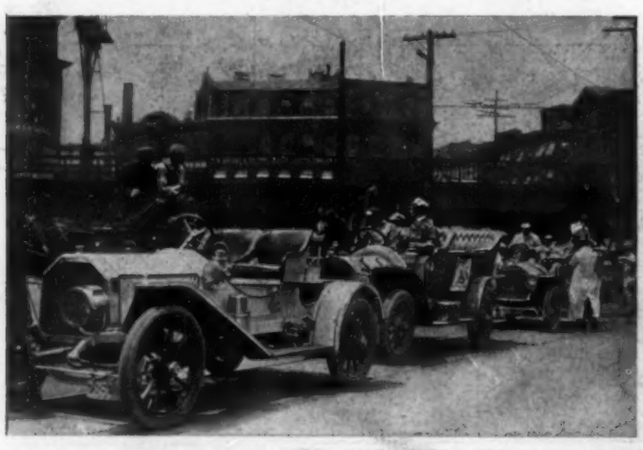
A. L. WESTGARD AND THE OFFICIAL POPE-HARTFORD.

ROLL OF HONOR IN THE A. C. A.'S SEALED BONNET CONTEST.

Official No.	CLASS	TYPE OF CAR	MAKE OF CAR	SELLING PRICE	DRIVER	ENTERED BY
1	A	40 h.p. Touring	Berliet	$7,500	P. J. Johnson	Amer. Loco. Auto. Co.
2	B	30-35 h.p. "	Stoddard-Dayton	2,500	E. C. J. McShane	Atlantic Motor Car Co.
5	A	40 h.p. "	Lozier	5,000	H. Michener	H. A. & J. T. Lozier
6	A	40 h.p. "	"	5,000	R. Mulford	" "
7	B	35 h.p. "	Elmore	2,660	A. M. Day	Arthur M. Day
8	A	30-35 h.p. "	Locomobile	4,500	H. Mitchell	Loco. Co. of Amer.
9	B	15-20 h.p. "	"	2,800	J. Florida	" " "
10	A	40 h.p. "	"	3,000	A. J. Bants	" " "
11	A	15-20 h.p. "	"	3,000	T. Beck	" " "
12	A	60 h.p. "	Thomas Flyer	4,000	M. Roberts	Harry S. Houpt
14	A	45 h.p. "	Pierce-Arrow	5,000	J. S. Williams	Harrolds Motor Car Co.
15	B	40 h.p. "	Aerocar	2,750	A. M. Robbins	Aerocar Co.
16	A	45 h.p. "	Royal Tourist	4,000	R. Tucker	Royal Motor Car Co.
17	B	40 h.p. Runabout	Continental	2,700	C. S. Johnston	Continental Auto. Mfg. Co.
19	B	25-30 h.p. Touring	Pope-Hartford	2,750	P. Hines	A. G. Southworth Co.
20	A	50 h.p. "	Pope-Toledo	4,250	Joe Judge	" " "
21	B	35-40 h.p. Runabout	Oldsmobile	2,750	W. Folberth	Olds Motor Works
22	B	30 h.p. Touring	Knox	2,500	A. E. Dennison	Knox Automobile Co.
23	B	30 h.p. Runabout	"	2,500	W. A. Bourque	" " "
25	A	40 h.p. Touring	Berliet	7,500	H. C. Townsend	Amer. Loco. Auto Co.
26	A	30 h.p. "	White	3,500	W. C. White	Walter C. White
27	A	30 h.p. "	"	3,700	H. K. Sheridan	Rollin H. White
28	B	30-35 h.p. Runabout	Stoddard-Dayton	2,750	R. Howard	B. F. Dawson
29	B	24 h.p. "	Corbin	2,400	J. Corbett	Corbin Motor Ve. Cor.
30	B	24 h.p. Touring	"	2,500	H. Trecker	" " "
31	B	24 h.p. "	"	2,500	A. Bailey	" " "
32	B	24 h.p. Runabout	Racytype	2,500	W. H. Birdsall	Mora Motor Car Co.
33	A	30-35 h.p. Touring	Studebaker	4,000	J. A. Holm	Studebaker Bros. Co.
34	A	30 h.p. "	Amer. Mors	5,000	N. M. Varney	St. Louis Car Co.
35	A	50 h.p. "	"	6,000	L. Potter	" "
36	A	24-32 h.p. "	Matheson	4,500	F. Lescault	Matheson Co. of N. Y.
37	B	30 h.p. "	Haynes	2,500	C. B. Warren	C. B. Warren
38	A	50 h.p. "	Darracq	9,500	E. Griffith	Darracq Motor Car Co.
39	B	24 h.p. Runabout	Mora	2,300	F. Cimiotti	Cimiotti Bros.
40	B	24 h.p. Touring	"	2,200	Mr. Stickney	" "
41	C	24 h.p. Runabout	Jackson	1,500	H. H. Cole	H. H. Cole
42	B	40 h.p. "	Deere	2,000	A. F. Camacho	Zim-Rock Motor Car Co.
43	A	40 h.p. "	Matheson	5,000	R. G. Kelsey	R. G. Kelsey
44	A	40-50 h.p. Touring	Rolls-Royce	8,250	L. R. Burne	Walter C. Martin
47	C	12-14 h.p. Runabout	Maxwell	850	Charles Fleming	Maxwell-Mriscoe Motor Co.
48	C	16-20 h.p. Touring	"	1,450	F. Offenhauser	" "

THOSE THAT FELL BY THE WAYSIDE AND THEIR TROUBLES.

3	B	30-35 h.p. Runabout	Stoddard-Dayton	$2,500	R. Newton	Placing nut on steering gear
4	B	36 h.p. Touring	Glide	2,500	J. McCafferty	Broken battery wire
18	A	45 h.p. "	Columbia	7,500	C. F. Barrett	Broken valve spring
24	A	50-60 h.p. "	De Luxe	4,750	C. S. Beach	Primary short-circuit
45	A	50 h.p. "	Welch	4,250	E. L. DeCamp	No oil in gear case
46	A	15-20 h.p. Runabout	Darracq	4,500	S. B. Stevens	Broken camshaft



BRIDGEPORT, WHERE MANY STOPPED FOR LUNCH THE THIRD DAY.

WEST HAVEN, THE TURNING POINT OF THE THIRD DAY'S RUN.

ITALY ALL-VICTORIOUS IN GERMAN RACE

HOMBURG, GERMANY, June 16.—Thursday, under a drizzling rain which transformed the serpentine mountain course into a nerve-racking track, two series of races were run off to decide the starters for the trophy offered by the German Emperor. On the first round there were thirty-nine starters, and on the second thirty-eight, the first twenty of each qualifying for the final. Germany, the most strongly represented, had fourteen cars qualified and nineteen eliminated; France had eight in and eight out; Italy qualified with nine and lost four; Belgium's proportion was six and two; England retained one car and lost two; Austria lost both her representatives, and Switzerland retained the only two Martinis she had entered. The feature of the day was the victory of the Fiat team, the position of the day's result being Nazzaro, Lancia, Wagner, first, second and third, only 6 minutes 35 seconds separating Wagner from his companion, Nazzaro.

At a very early stage the contest settled down to a struggle between Italy, Belgium and Germany. France, with her eight cars, was not a formidable competitor; Darracq had the disadvantage of being in the hands of amateur drivers; Lorraine-Dietrich, from whom much was expected, developed a number of minor troubles, and the others were lacking in speed. England was entirely out of the game.

Fritz Opel, who started second on an Opel machine, finished first in a wild rush, followed by Hemery, now in the employ of Benz, of Germany. Lancia, who according to his starting position should have finished early, was slow in coming round, occupying 1:40 to cover the course, compared with 1:23:50, the record established by Nazzaro, and thus losing all chance of capturing the cup. Duray and his Dietrich abandoned on the initial round; Vincenzo Florio withdrew his Darracq with a cracked cylinder; Wilhelm was killed through his Metallurgique overturning at the foot of a descent, and Willy Poegge, with the bad luck which followed him in the Herkomer tour, had to retire with his Mercedes after a dangerous fire at the carbureter.

By the third round the race had settled down to a keen struggle between the Fiat and the Pipe teams, representing Italy and Belgium with Opel hanging dangerously near. At the end of the second round Hautvast and Deplus, both on Pipe machines, had got a lead on Nazzaro and were running with such remarkable regularity that, barring accidents, victory seemed assured. Hautvast, who had started out with 1:24:14 for the first round, gained 12 seconds on his second round and lost 9 seconds on the third. It was this loss of time on the third round which gave Nazzaro a chance to get ahead. His position, however, was by no means secure, for the terrible Belgian was only 33 seconds behind and his comrade, Deplus, was in a good position and going well.

When the fourth and last round commenced excitement, which had been well sustained, increased to high tension. Lancia, who since his slow first round had been going faster and faster, was first to finish, covering the fourth round in the record-breaking time of 1:21:52, equal to 54.1 miles an hour. Wild bursts, however, will not win modern automobile races, and Lancia had to go down six degrees in the general classification. Deplus, the dangerous Pipe driver, had to abandon on the last round, when second or third position seemed certain, as the result of an accident to steering gear. A tire burst on Hautvast's Pipe when near the end of the race. His Continental-Vinet dismountables soon provided a substitute, and the most remarkable run of the day was finished in good form, the difference between Hautvast's fastest and slowest round being but 2 minutes 22 seconds.

Hardly had the Belgian reached the grand stand than Nazzaro went by with a roar and snatched a glorious victory from his rival by a margin of less than five minutes. As he got out of his seat Nazzaro, with a broad smile over his countenance, declared:

"I was never so hard pressed in my life. It was a fine race. My machine went splendidly, but Hautvast is a terrible driver."

Joerns, on an Opel, who since the end of the first round had been in third place, finished in that position, with his companion, Michel, fourth at an interval of ten minutes. Wagner, who on the second round had lost ten minutes, went faster as he neared the end of the race, finishing fifth, less than two minutes ahead of Lancia. Henry Fournier, riding after an absence of several years from the race track, achieved a notable victory for his Italas from Italy by capturing eighth position. Cagno and Fabry, his team mates, also finished the race, thus sharing with Fiat the honor of being the only team of three to stand the terrible strain.

Emperor William, who from start to finish had not missed the smallest detail of the race, clad in his gorgeous uniform, with fitting royal dignity, presented the cup to Nazzaro and heartily congratulated him on his success.

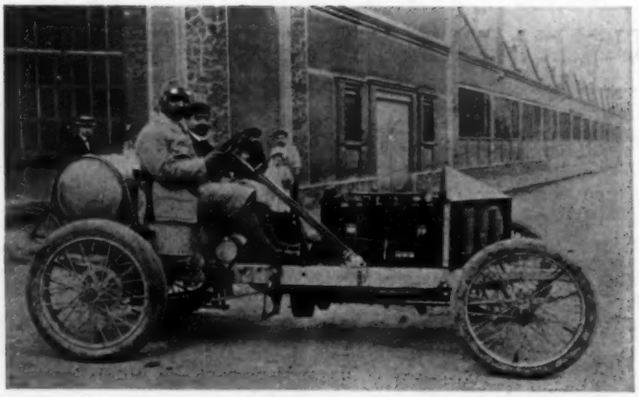
FOURNIER, WHO HAS RETURNED TO RACING.

HAUTVAST, THE TERRIBLE BELGIAN.

SCENE AT ONE OF THE TIRE STATIONS.

Classified Results of the Emperor's Cup Race.

1.	Fiat (Italy), Nazzaro	5:34:26
2.	Pipe (Belgium), Hautvast	5:39:10
3.	Opel (Germany), Joerns	5:39:49
4.	Opel (Germany), Michel	5:49:35
5.	Fiat (Italy), Wagner	5:50:53
6.	Fiat (Italy), Lancia	5:51:11
7.	Isotta-Fraschini (Italy), Minoia	5:51:15
8.	Itala (Italy), Fournier	5:53:18
9.	Mercedes (Germany), Salzer	5:57:33
10.	Itala (Italy), Cagno	5:59:12
11.	Eisenach (Germany), Schmidt	6:03:31
12.	Martini (Switzerland), Beutler	6:05:11
13.	Dietrich (France), Rougier	6:08:16
14.	Mercedes (Germany), Jenatzy	6:08:54
15.	Martini (Switzerland), Beck	6:21:14
16.	Itala (Italy), Fabry	6:29:01
17.	Bianchi (Itala), Tommaselli	6:31:45
18.	N. A. G. (Germany), Scholz	6:35:33
19.	Durkopp (Germany), Schmidt	6:46:46
20.	Protos (Germany), Adelberger	7:13:08



NEW DARRACQ RACER RESEMBLES VANDERBILT VICTOR.

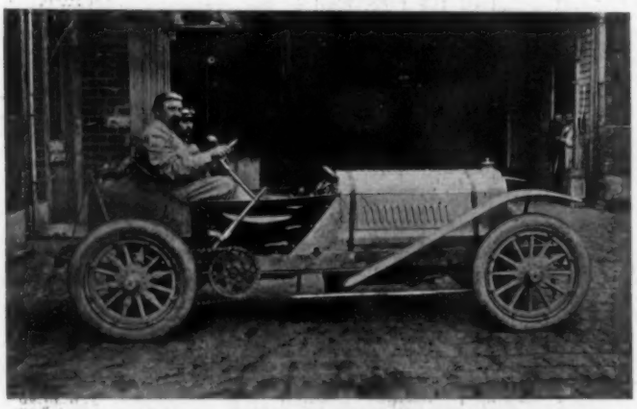
CANDIDATES FOR GRAND PRIX.

Tuesday next, July 2, on a triangular circuit near Dieppe, the Automobile Club of France will conduct a speed contest which by reason of the fast course selected, the power of the machines and the elaborate nature of the organization, will be the most important of all the races ever held in Europe or elsewhere. Additional interest attaches to the Grand Prix by reason of the application for the first time of a limited fuel supply as the only power-restrictive measure.

Contrary to what might be expected, there are no radical differences between the leading machines of Grand Prix 1906 under the thousand kilos weight limit and Grand Prix 1907 with no other restriction than an engine which does not consume more than a gallon of gasoline per 9.4 miles.

Renault, victorious last year, presents three machines which might at first glance be mistaken for those which Szisz, Edmond and Richez handled on the Sarthe circuit. They are a few inches shorter, are slightly narrower and have profited by the minor carbureter, magneto and radiator changes of touring models.

Brasier, who last year had the honor of being the only French maker to finish with a complete team, has also stuck to well-tried models. Same motor, same wheel base and same track. The radiator is set still further back, being now distinctly rear of the front axle, thus bringing the weight nearer to the back wheels and assuring the best utilization of the tractive effort. Final drive is by side chain on two and by cardan shaft on one machine, compared with all three chain-driven racers last year. Henri Brasier has probably made more comparative tests with chain and shaft drive than any man living. The tank, tire brackets and seats are as close up to the rear axle as possible, the seats indeed being formed into the tank. A feature of the tire carrying equipment is a strong metal pan large enough to hold three inflated tires. Changes have been made in the carbureter on account of the new racing conditions.



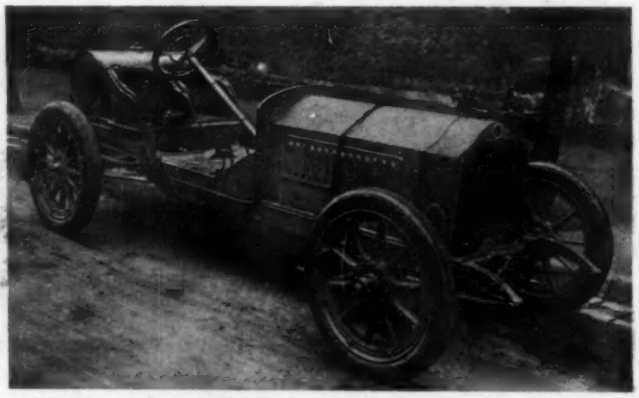
SEATS AND RADIATOR POSITION DISTINGUISH BRASIER.

Darracq is another French constructor who has adhered to last year's types, the racers being practically the same machines as were seen on the Sarthe circuit and in the Vanderbilt Cup contest. Engineer Ribeyrolles has made a change in the clutch, by substituting bronze for leather. The bronze is riveted on the aluminum of the male cone exactly as if it were leather, then turned and ground to fit the female cone. A few grooves are provided in order to allow foreign matter to escape. At the start the clutch will probably slip a little, but will soon give a perfect hold. An advantage is a much smaller diameter. Panhard, on the other hand, has made a complete change, not only in general appearance but in structural detail, as has already been described in earlier numbers of THE AUTOMOBILE.

Lorraine-Dietrich racers are shorter in wheel base and are rather narrower, have chain drive, as last year, and have had the engine stroke increased from 160 to 170 millimeters.

Motobloc and Corre, two French firms having had little or no previous experience in road racing, present three and one flyers respectively. The feature of Motobloc is that the motor, clutch and gears are united on one crankcase, forming a single unit or block, hence the name. The four cylinders are cast in pairs, and have 165 mm. bore by 140 mm. stroke. The flywheel is carried between the two groups of cylinders.

Corre, after building small runabouts ever since automobiles were known, experiments with a powerful racer this year. It



CORRE, WHICH WILL MAKE ITS DEBUT ON JULY 2.

has a four-cylinder engine, 6 by 6 inches bore and stroke, developing 90 horsepower. Leather cone clutch, three speeds and reverse through sliding gear, with final drive through bevel gears and rear live axle are its transmission features.

With the exception of the Porthos, to be driven by Striker, a naturalized American, all French machines have four cylinders, there being a strong feeling among native constructors that a multiplicity of cylinders does not tend to fuel economy. The Porthos Grand Prix has eight cylinders cast in pairs and placed tandem fashion, dimensions being 4.3 by 4.7 bore and stroke. The machine has cardan drive, four speeds, 106-inch wheelbase, and is estimated to weigh 2,090 pounds. The only six-cylinder representative is an Aquita-Italiana from Italy.

Among the foreigners there are two eight-cylinder engines, one from the Weigel factory in England, and the Marchand, built by the Dufaux Brothers of Geneva. Here again the cylinders are in pairs, 4.9 bore by 5.9 inches stroke. Chain drive is employed.

Of the thirty-eight machines entered in the race none are attracting so much attention as the three Fiats, to be driven by Nazzaro, Wagner and Lancia. Last year's racers have been conserved and have undergone a careful tuning up and some modifications of the carbureter, about which little is known outside the factory. Cylinder dimensions are 180 by 160 bore and stroke, giving a volume only exceeded by Mercedes. The three machines from the premier German factory are practically a reproduction of last year's models with the new Saurer water jacketed carbureter.

HERKOMER COMPETITORS UNDERGOING SPEED TESTS ON MILITARY GUARDED ROAD IN THE FORSTENRIED PART.

FRANKFORT, Germany, June 16.—The best automobile in Europe—according to the Professor von Herkomer definition—has been discovered in the Benz machine, from the well-known Mannheim factory, driven by Fritz Erle and owned by Herr Ladenburg. In 1905 Ladenburg won the cup, and as the victorious machine driven this year by Engineer Erle of the Benz factory is still Ladenburg's private property, he becomes the permanent possessor of the coveted German tourist trophy. Next year it will be necessary to create a new trophy, the Herkomer Cup being now sportingly deceased, but the task will not be difficult, and it is very probable that the newcomer will have a strong resemblance to the late departed.

Hans Aschoff, on a Metallurgique from Belgium, gained second position; Henri Opel, with a machine from his own factory, captured third prize, and the following in order of merit were: (4) De Lingerke, Mercedes; (5) Karl Neumaier, Benz; (6) Herr Schmierer; (7) Richard Benz, Benz. In addition to these, thirteen machines came through the contest with clean scores, all of them German except Miss Dorothy Levitt and her six-cylinder Napier—both distinctly British.

From Lindau we set out 124 strong on the fourth stage of our seven-day contest, having as accompaniments magnificent weather and heavy, greasy roads, which proved a terror to the smooth-tire men. On the run to Forstenried, over a mountainous road, there were a number of minor mishaps, if the loss of a wheel can be called a minor—but they did not prevent the drivers repairing hurriedly and taking part in the speed test. Willy Poegge, on a Mercedes, showed the fastest burst of speed, covering the 6 kilometers 900 meters, with a flying start, in 2:51:3. Veingand, also on a Mercedes, was a good second; Fitz Erle, on a Benz, came third, and Ladenburg, on a Mercedes, had fourth position. These were the results on net running time. When a classification has been made according to cylinder capacity there may be a slightly different tale to tell.

Arrangements for the speed tests in Forstenried Park were perfect and all passed off without a hitch. An excellent stretch of road, wide, straight, with a good surface, and carefully guarded by troops, allowed of the fastest going. From the standpoint of the numerous spectators there was the additional attraction of fine weather and as fair a piece of landscape as one could wish to look upon.

THE GIANTS TAKE A NOON-DAY REST AT WURZBOURG CONTROL.

Sunday at Munich was a rest day for the cars and drivers, but an exceedingly busy period for the inhabitants, who turned out in thousands to visit the exhibition ground where our automobiles were staged. Quite apart from the cup, a prize was offered for the most luxurious and well-appointed car, which, after a long search, was discovered in the Benz owned by Dr. Pfundt. Probably never before had such a large number of luxuriously appointed automobiles been gathered together, outside of a show, as was to be seen at the Munich exhibition ground, most of them being powerful touring cars with closed bodies and ample protection against sun and rain for the driver. By a comparison of notes during the day, it was possible to forecast with some accuracy the winner of the cup. E. Ladenburg appeared to have the best chance; up to this point he had a clean score, his powerful Mercedes of 140 by 150 bore and stroke starting first every morning and acting as pilot car, giving a distinct advantage.

Hill Climb Weeded Out Several Contestants.

Munich to Augsbourg, the sixth stage, is a distance of but 130 miles; as, however, there was a loss of about two hours in organizing the Kesselberg hill climb, the total mileage for the day was sufficient. On the winding, difficult hill there were several accidents, in which machines only were the sufferers. Willy Poegge, a very likely winner up to this point, broke the differential of his Mercedes and had to definitely abandon. Four others were placed hors de combat on one or other of the sharp turns. Mathis, on a Fiat, appeared to be terribly fast, as was also Fitz Erle on M. Ladenburg's Benz. This, however, is but a matter of personal appreciation, all figures in connection with the event being kept by officials and not revealed until the meeting of the jury at the end of the day. It is one of the defects of the Herkomer tour that you never know with any degree of certainty what position you occupy in the contest, all figures being guarded with as much secrecy as if they were related to matters of national defense.

How the Laggards Were Taken Care of.

Running into Augsbourg on the "schluss-wagen," the English for which is "whipper-in," one has an excellent opportunity of judging the infirmities of the weaklings. The whipper-in has to close the march, leaving in the rear only those machines incapable of advancing an-

POWERFUL ELEGANT CLOSED CARS WERE NUMEROUS.

A FRENCH REPRESENTATIVE ON GOOD MOUNTAIN ROADS.

other yard. At times the duties are wearisome, as, for instance, when waiting in the dusk for a big car to fit a couple of new tires. But the rear guard service has its advantages, in that it allows a proper appreciation of the beauties of the scene, and beauty spots on the Herkomer course are never wanting.

Leaving Augsbourg at 8 o'clock, with Frankfort, 210 miles away, as final destination, the 128 competitors soon experienced bad weather. Rain fell in torrents, blinding the drivers and putting the roads into a condition which called for the utmost caution to keep the cars right side up. During the day a Pope-Toledo, accompanying the tour on an alcohol experiment, but not taking part in it officially, turned over into a ditch. The occupants were thrown into the hood, all escaping with a shaking. At Wurzbourg, where there was a stop for lunch, the weather suddenly changed to as satisfactory a condition as one could imagine, and under a bright sun the second half of the daily task was accomplished and Frankfort entered in triumph. While the jury calculated assiduously to discover which of the 128 survivors should be officially declared the victor, the enthusiastic Frankfurterites cheered, each and all letting loose more enthusiasm than is generally thought to exist in a Teutonic temperament. An official banquet wound up the tour in a dignified military manner; toasts to the Kaiser, the organizing Imperial Club, the victor, the thirteen spotless survivors, and the more numerous group which found black points scored against it, being carried with gusto.

In 1905 the Herkomer trophy was won by E. Ladenburg; the following year R. Stoess proved the victor, and this year Germany is again victorious in the person of Fritz Erle, driving E. Ladenburg's Benz. It is in virtue of his ownership of the winning machine that E. Ladenburg is declared the permanent possessor of the cup. Germany has been victorious all along the line, for of the twenty machines finishing the contest with clean scores only one is of foreign origin. Benz, the victorious firm, though one of the leading German factories, is but little known outside that country. They are building a new factory at Mannheim, from which 1,000 cars per annum will be produced, and arrangements are being made to open an agency at Paris.

FRANCE AFTER UNIFORM RACE CONDITIONS.

FRANKFORT, Germany, June 17.—Taking advantage of the presence of automobilists from all parts of the world, an international conference of recognized automobile clubs is being held here. France is interested in a uniform regulation for automobile races and has, after agreement with other bodies, put forth the proposition that 1908 races should be held under the following regulations: Minimum weight, 1,100 kilograms (2,420 pounds); maximum fuel allowance, 4.4 gallons per 62.1 miles. Germany brings up nine subjects for discussion.

DE DION WANTS 33,000,000 GALLONS OF ALCOHOL

PARIS, June 12.—France has a present problem in the wine growers' agitation in the south and future difficulties in the increasing cost of gasoline. Marquis de Dion, vice-president of the A. C. F., believes that the automobile can again save France as it saved it a few years ago. In the Chamber of Deputies recently he declared that there are 40,000 automobiles in France consuming about thirty-three millions of gasoline per year. If, instead of using gasoline these 40,000 cars employed home-produced alcohol, the north would no longer be obliged to produce sugar to adulterate the wines of the south, honest wine growers would be free from competing adulterators, and the automobile would have an unlimited supply of fuel. The Marquis has asked for an extraparliamentary commission to consider the matter.

LEAVING A CHARMING BIT OF BAVARIAN SCENERY TO TACKLE THE STEEP GRADE NEAR KESSELBERG.

BALL BEARINGS FOR AUTOMOBILE CONSTRUCTION*

By HENRY HESS.

THE field of usefulness of the ball bearing is as wide as the domain of mechanical engineering, or at least that portion of it which is concerned with the support of rotating or oscillating parts. The limitation imposed on the use of the ball bearing in no sense differs from that imposed on any other element of mechanism. It must be employed in accord with the general prohibition against overloading and in conformity with its individuality. That sounds axiomatic and is self-evident enough; but self-evident as it is, it is all too frequently disregarded. Little information on ball and roller bearings can be found in the usual engineering hand and text books. Generally the subject is dismissed with a casual reference; occasionally a formula for carrying capacity is given, but this is usually wrong. Much matter is scattered through the technical press giving isolated experiences with a few bearings that happened to come within someone's observation. Insufficient information on almost every element that must be considered is undoubtedly responsible for the directly contradictory statements to be found and the generally accepted opinion that ball bearings are suitable only for relatively light loads.

This was the situation as Professor Stribeck found it, when asked to investigate the subject for the German Small Arms and Ammunition Factories of Berlin. This concern, having been induced to go into the manufacture of balls and ball bearings, very soon found itself confronted with the imperative need for a scientific basis, if the manufacture was to be removed from the domain of haphazard blind working, resulting sometimes in success and sometimes in failure, the one as much a result of pure chance as the other and neither the result of science.

With characteristic thoroughness Professor Stribeck took up the subject. He first applied the investigations of such men as Hertz, Auerbach and others, on the deformations of elastic bodies to the development of formulæ for static conditions, then by exhaustive tests, determined constants for the materials and followed with an investigation into the conditions of relative motion, and finally concluded the whole by a long and patiently conducted series of observations with actual bearings, thus not only proving the previous theoretical investigation, but also developing data for the use of the work-a-day designer and engineer. That this labor has been crowned with success is evident enough from a consideration of the uses to which ball bearings constructed along the lines laid down have been put in the last ten years; these include not only light bearings for low and high speeds, but others for carrying the 24-ton armatures of electric flywheel generators at 500 revolutions per minute, etc.

This work of Professor Stribeck's undoubtedly is a classic in its field, so that no apology is needed for annexing a full translation and so making it available to the American engineer.

Translator's Résumê of Professor Stribeck's Report.

For the statements and form of this résumé, the translator is alone responsible, but believes that it may be accepted as a correct condensation of Professor Stribeck's work.

Sliding bearings wear out by abrasion of the carrying surfaces. Ball bearings do not give out from wear and do not wear. They may be ground out by admitting grit, but that is as illegitimate a condition for ball bearings as it is for sliding bearings. The only legitimate cause for the giving out of ball bearings is the stressing of their material beyond the limit of proportionality. Lightly loaded bearings can be so designed as to eliminate this cause and so insure practical indestructibility. For heavily loaded bearings this condition is not realizable within practicable dimensions, but the proportions may be so chosen that the over stressing does not result in breakdown within the lifetime of any mechanism to which the ball bearing is applied.

*Extract from paper read at the Indianapolis, Ind., meeting of the American Society of Mechanical Engineers.

A knowledge of the elastic qualities of the materials at the hardness under which they are used is imperative. It being the elastic behavior that is important with ball bearings as with all other engineering structures, tests of balls, such as are commonly made to determine ultimate rupture when pressed into a steel plate and using the depth of indentation of the plate or load at which rupture occurs as a measure of ball quality, are not only of no value, but are misleading.

The quality of balls and of ball races must be determined from their behavior under loads in the neighborhood of the elastic limit. Balls may be subjected to loads increasing as the shape of the supporting surface more nearly becomes complemental to that of the ball. A ball running between races having a flat or straight line cross section will not support as great a load as though the section were that of a curvilinear groove. Such groove naturally must never have a curvature equaling that of the ball, since that would substitute sliding for rolling contact.

The frictional resistance of a ball bearing is lower, the less the number of balls. Usually bearings can be designed to have between 10 and 20 balls. As balls are usually made to English inches it is convenient to take one-eighth of an inch as unity.

Some Prime Requirements of Ball Bearings.

Speed of rotation, in so far as it is uniform, does not affect carrying capacity. (This applies to radial bearings, but not to thrust bearings of the collar type; in these the carrying capacity decreases with increase of speed.) But speed is rarely uniform; variations cut down the carrying capacity; sharp variations of small amplitude, particularly at high speed, have the more marked effect. Their reducing action is similar to the battering effect of sharp load variations. *Load variations reduce carrying capacity,* the effect increasing with the amount of the load change and the rapidity of such change. *Accumulated experience* with various classes of mechanisms is so far the only available guide for estimating the reductions in the constants that must be made to take these influences into account.

The carrying capacity of a complete bearing is no greater than that of the weakest cross section that comes under the load. This applies to all those forms which have curved race sections of maximum sustaining capacity, except at a point where an opening is cut to permit the introduction of the balls; such bearings are, as to load carrying capacity, governed by the weaker cross-section at that point.

The calculated carrying capacity can be realized only if all balls sustain their share of the load. It is obvious enough that if a ball is smaller than those on either side of it, it will not carry its share of the load; should it be larger, it will carry more than its share and may be overloaded. Uniformity of ball diameter is essential. The permissible variation in ball diameter will be governed by the deformation produced by a relatively small part of the total bearing load, so that the balance of the load may be distributed over the several balls. Such permissible variations of ball diameters amounts to but little more than one ten-thousandth part of an inch.

High finish of both ball and ball sustaining surfaces is essential. The presence of grinding scratches will very materially cut down the cited values of the constant. Of course this presupposes true surfaces underlying the high polish. It follows from this requirement that rust and acid must be carefully avoided as they are destructive of finish and truth of shape. It may not be amiss to point out that *uniformity of quality of material, of hardness and of structure throughout are essential.* The mischief of using balls having different values is not simply confined to the individual ball; if, for instance, one ball were materially harder and so deformed less than its mates, it would take more load and might therefore overload the material of the race, which would yet be

entirely suitable under a division of the bearing load among a larger number of balls.

The frictional resistance of ball bearings has, by actual measurement, been found to very from 0.0011 to 0.0095. These are the coefficients of friction referred to the shaft diameter, thus permitting direct comparison with those of sliding friction. The higher values are due to conditions that cause a preponderance of sliding as compared with rolling friction. It must be remembered that there is no such thing as a bearing having only rolling friction; that might be possible were balls and races made originally with absolute truth of surfaces and were such truth then maintained by the absence of deformation under load. Ball bearings having a coefficient of friction materially above 0.0015 under the greatest allowable load are inadmissible because too shortlived. The high resistance indicates the presence of too large an element of sliding.

A good ball bearing will have a coefficient of friction, independent of the speed within wide limits, and approximating 0.0015. This coefficient will rise to approximately 0.0030 under a reduction of the load to about one-tenth of the maximum.

Suitable Materials for Ball Bearings.

The prohibition against overloading demands recognition of the characteristics of the bearing materials. Any material may be used that will not, under the working load, be so deformed as to prevent pure rolling. That means an absolutely inelastic material and one which unfortunately is, and more than probably will remain, undiscovered. But a slight narrowing is admissible to make the demand read: *Any material may be used that will not, under the working load, deflect enough to prevent substantial rolling.* That recognizes that all materials deform under load. Such deformation means change of shape from the original truth and that in turn will cause some sliding combined with rolling; *this sliding must be held down to the irreducible minimum.* Any material may be used that will not, under the working load, be stressed beyond its elastic limit; that is a limitation which is possible of attainment.

The tooth of time would be worn out against such a bearing. Its design is entirely practicable for light work, but for the heavier loads, the requirements would lead to, usually, impractical dimensions. Fortunately, ball bearings, like various parts of the "Deacon's One Hoss Shay," are satisfactory if they last as long as their associated mechanisms. The requirement may therefore be modified to read: *Any material may be used that will not, under the working load, be stressed sufficiently beyond the proportional limit, to bring about its destruction before the lapse of a desired working life.* These conditions permit the use of practically all of the materials known to mechanical engineering. With very few exceptions, however, the load conditions are such as to demand steels of the highest grades and these most carefully tempered. For automobile use, with which this paper is primarily concerned, no others can be considered. That puts out of the running all merely case hardened materials. In these there is always a more or less sharply defined change of structure at some distance below the surface. Continued working will cause a loosening of the hard shell from the softer core, soon followed by a breaking up and very characteristic flaking of the surface. Usually this flaking is local; its action is increasingly progressive, soon involving the entire bearing.

What has been said of case hardened materials holds true also for those carbon steels in which the hardening is not carried substantially and equally through the entire mass. I have here half of a ball. In this a sharp structural change due to hardening occurs at a fairly uniform depth of one-sixteenth inch below the surface. The ball has evidently been run under conditions which shifted the load over its entire surface; it was used in a running test and then broken to examine its structure. It so happened that the ball was caught just before it was ready to fail by flaking. The entire hardened surface has been loosened from the core in such way as to form an inner ball. Some relative movement of this shell and inner ball has undoubtedly taken place, as is evidenced by the polished condition of the inner surfaces. The ball is from a series of tests made to try out various materials; this particular grade is very evidently not suitable.

What is true and required of the ball materials is even more so for the races. With time the ball presents its entire surface to the load, the small vibrations and changes of load being sufficient to frequently bring in a new axis of rotation. Not so the race; that is fixed and so always exposes the same surface element to the load attack.

Absolute Accuracy Is Always Essential.

The requirements of a good ball are:

a. Truth of shape and size. The permissible limit of error will vary with the character of the material. In general, the better the latter, that is to say the smaller its deformation under a given load, the more accurate must the ball be. It is evident that, were a ball so much larger than its fellows as not to deform sufficiently under its share of the load to permit the others to carry, that it would then not only itself have to carry more than intended, but would also transmit more than intended to the supporting surfaces of the races. If, on the other hand, the ball were smaller than its mates, it would be underloaded or not loaded at all, and the others correspondingly overloaded. What has been said of variations in ball size, of course, applies similarly to variations from truth of outline.

All requirements will be met if the balls are true to shape within one ten-thousandth part of an inch and if all of the balls used in each individual bearing have a similarly small error in size. It must not be inferred that for materials of lower grade, larger inaccuracies are permissible. Were the load distribution the only factor, that conclusion might be justified; greater inaccuracy of size means greater deformation and therefore greater departure from sphericity and the substitution of too great a percentage of sliding for the rolling aimed at. Considerable initial variations from truth of shape have precisely similar results.

b. Surface finish to a very high degree is also essential. What is usually considered a very good finish indeed may be characterized as totally inadequate. The recognition of grinding or polishing marks not only by the bare eye, but with an ordinary pocket reading lens, condemns balls utterly; this is true of a bearing having long life under high loads and speeds. Oft repeated endurance runs under conditions where the finish was the only variable have abundantly proved this, at first unsuspected, fact. This was discovered while investigating an apparently inexplicable difference in lasting qualities. As life is too short for a try out under normal loads, overloads were resorted to; they demonstrated conclusively that the higher the finish, the better the endurance. The high finish must not be of the Brummagem or Reuleaux's "cheap but nasty" variety.

c. The Elastic limit should be as high as can be had. A limit of proportionality above the elastic limit is desirable.

d. The *hardness and uniformity of hardness* throughout the mass of the ball to the highest attainable degree is essential.

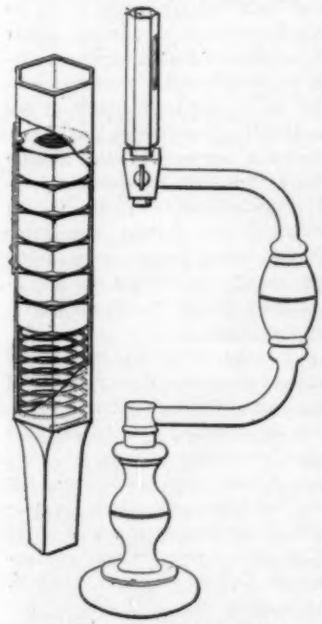
e. Correct knowledge and uniformity are more important than even these requirements of high elastic limit and hardness. It will not do to say that, though some balls of a lot may do better than others, the design may be based on the poorer ones. That would result in the better balls carrying more of their share of the load, much as and with the same bad effects described while considering truth of shape and size. Lower quality, provided it is uniform, can be allowed for. It will then merely affect dimensions.

Ball making machinery has arrived at a very considerable state of perfection; but balls within a limit of one ten-thousandth of an intended size are not yet being made without the sacrifice of other qualities. That is, however, not important beyond having some slight bearing on cost, since it is perfectly feasible to select and grade balls within the desired limit; but the hardware dealer's word for uniformity of size is not a safe guide; he is perfectly honest in throwing odd lots of 5-8-inch balls into one box and in thinking the customer who objects because they vary a half-thousandth, or even two, a "finicky crank."

(To be concluded.)

WHAT AUTO INVENTORS ARE DOING ABROAD

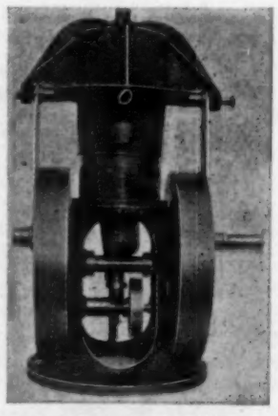
IT has always been more or less of a mystery to the average autoist just how the magazine wrench used in connection with dismountable rims for racing, stowed away the nuts so neatly as they were flipped off the rim one after the other and also how it automatically released them for further use when replacing the rim. Just how it works is plain at a glance at the accompanying illustration, and doubtless its extreme simplicity will be the first thing to strike the observer. One of the old types of braces is shown in the illustration, but as the tool is provided with a regular bitstock it is quite evident that the bit may be employed equally well with any brace. The tool is nothing more or less than a socket wrench with sufficient length of hollow stock above it to accommodate the number of nuts required—never more than six in the case of foreign racing rims as shown by the cut. As they are received one by one, they serve to compress a helical spring in the butt of the tool and are retained by an automatic catch at the side, the operator not having to touch them at all. To replace, releasing the catch in question brings the last nut to be taken off at the end of the wrench, a new one coming forward each time the catch is released. The illustrations are taken from *Omnia*.



NEW MAGAZINE WRENCH.

A Motor with Reciprocating Cylinder.

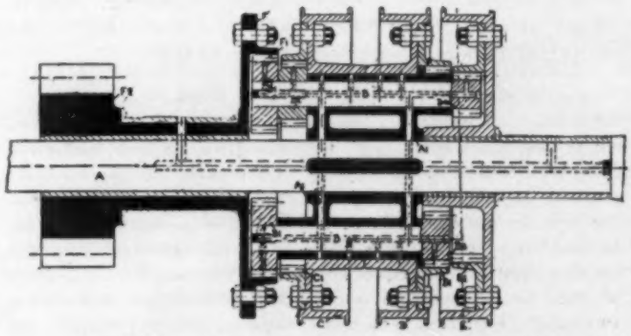
Rather a novel motor that is of interest as illustrating one of the many forms in which the internal combustion engine may be made is illustrated and described in the *Motor Trader* of recent date. Page Renouf is the inventor and the motor is termed the auto-cooler, and though no special provision has been made for air-cooling, it is claimed that the motor may be dismounted with bare hands after having run for some time. The piston is stationary and integral with the pedestal of the engine, the model built being of the stationary type. Another novel feature of the piston is that it contains the valves in its head, the latter being concentric with the inlet valve lying inside the trunk carrying the exhaust; this stationary piston is fitted with the usual rings. Any extra weight necessary in this part of the motor is said to be more than compensated for by the lightness of the cylinder. Besides this, the impulse being the reverse of that of the standard type of motor, the connecting rods are in tension on both the compression and power strokes, which enables their sectional area to be greatly reduced. It is said that the sum of these factors amounts to a substantial reduction in the weight of the reciprocating parts. These connecting rods are fastened at their upper ends to two horns and below to two substantial flywheels which are carried on a short straight shaft. Lubrication is effected automatically by the cylinder dipping into a groove formed in the base casting and kept constantly filled with oil, which is thus forced up the cylinder rim by displacement. A standard type of float-feed, atomizing jet carbureter is employed. The appearance of the engine in complete running order is shown by the accompanying illustration reproduced from a photograph.



RENOUF'S AUTO-COOLER.

A Novel Three-Speed Planetary Gear.

Though it has its disadvantages, it also has its good points, and the latter are such that the planetary gear continues to be a factor, although it has all but disappeared from everything but light cars in this country. The Englishman favors the epicyclic, as he dubs it, and study has resulted in the production of ingenious modified types, such as the Adams-Hewitt and the Fairfax, which are planetary gears that are not planetary, as the first employs no orbit or internally toothed rings and the latter has no sun wheel, only the planet pinions and racks being employed. These are referred to in the *Automotor Journal*, which publishes a detailed description of the latter.



SECTIONAL DRAWING OF FAIRFAX EPICYCLIC GEAR.

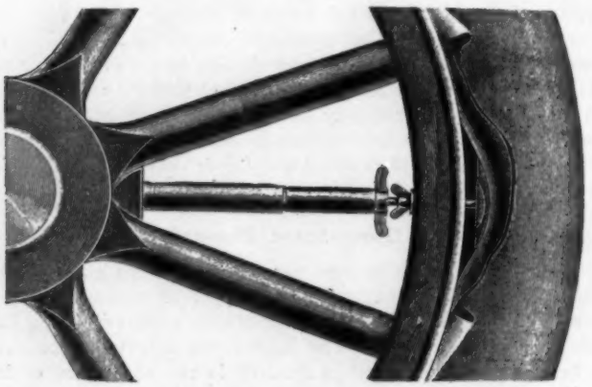
The chief advantage gained by the construction found in the Fairfax, as compared with the more usual form, is that it can be made to give a much greater range of gear ratios than is otherwise practicable. For instance, it can be designed to give a ratio of 1 to 14 on one speed, while at the other extreme this ratio may be increased to 1 to 37.03, such is its range. Between these two extremes twelve different gear ratios are possible without changing the final train of pinions. The detailed arrangement of this gear is made plain by the accompanying sectional elevation of one of this type constructed for use on a heavy steam lorry.

In this particular form of the Fairfax gear there is no reverse, as the latter is obtained by reversing the direction of motion of the engine itself. There are only three forward speeds, each of which is obtained by holding stationary one of the brake drums, C, D or E. These drums carry annular racks, with which the planet pinions B2, B3 and B4 mesh. The pinions B2 and B4 are mounted on the same spindle, but each of the pinions B3 is on an independent spindle in conjunction with one of the planets C1, through which power is transmitted to the rack F1, on the driving member F, which also carries the large spur gear F2. Each planet pinion has its duplicate on the spindle diametrically opposite, so that the strains on the mechanism are balanced.

To Prevent Pinching the Inner Tube.

One of the most frequent annoyances in fixing an automobile tire is the danger of nipping the inner tube, with, as a result, the bursting of the air chamber before the car has traveled any great distance. When mounting the tire one hand is engaged in holding up the lug, while the other pushes the beaded edge of the

shoe into position. Failure to do this will result in the tube being held in the fierce grip of the shoe. A French device has been produced by which the lug is held up, leaving both hands free for working on the outer shoe. It is a simple but useful ap-



DEVICE FOR PREVENTING INJURY TO INNER TUBE.

pliance, the construction of which will be readily understood by an examination of the accompanying illustration. Charles Durand, of 178 Boulevard Periere, Paris, is responsible for the tool, which is now being placed on the market.

A Trap for Mischievous Boys.

An English autoist who has probably had his patience taxed by the ubiquitous small boy surrounding his car and taking liberties with it while it is reposing at the curb, has exercised his inventive ingenuity on the problem of devising an effective device to make the inquisitive youth have a wholesome respect for the innocuous looking "buzz-wagon." By taking advantage of the fact that most cars are equipped with high tension coils and carry batteries, he has devised a system which is described in *Motoring Illustrated*. For those who find themselves similarly minded and wish to teach the urchin who would defile the paintwork of a car by scratching his initials on it, the following directions taken in connection with the accompanying diagram of the necessary wiring, will be found useful.

Run a low-tension wire from one of the terminals of a spare battery to a tumbler switch, such as is used for electric lighting. This should be fixed to the dash or under the seats. From the other terminal of this switch run another low-tension wire to one of the two primary coil connections. These usually have dis-

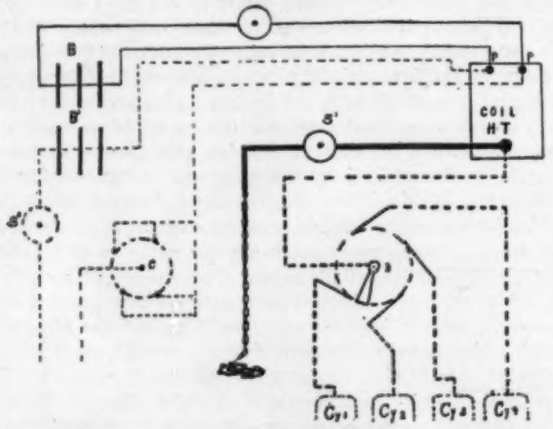


DIAGRAM FOR CONNECTIONS FOR A SHOCKING CIRCUIT.

tinguishing letters, but in a coil which is already coupled up for ignition work they will be those terminals to which low-tension wires are already attached.

Run another low-tension wire from the unoccupied spare battery terminal direct to the second primary coil connection. If the switch be now closed, the trembler will immediately vibrate, the ordinary ignition circuit being switched off altogether.

Carry a high-tension wire from the secondary coil terminal (*i.e.* that terminal from which a heavy high-tension wire already passes to the distributor or spark plug) to one terminal of a tumbler switch mounted on a porcelain base.

From the other terminal of above switch, run a high-tension wire under the floor to the end of a length of chain sufficient to trail on the ground. Solder the connection between wire and chain. Screw to the underside of floor a hook, upon which to hang the chain when not in use. Secure the wire to the under side of floor by insulated staples, or other suitable means, to obtain firm support from the chain without making electrical contact with the car frame. Do not fasten the chain itself to the floor, unless it be by means of an insulated screw-eye.

If, now, the switch controlling the primary or low-tension circuit be closed, the coil will "buzz," but nothing else will happen until the chain is lowered, and the second switch controlling the high-tension or secondary circuit is also closed. The frame will then be alive, and ready to give a shock to anyone standing on the ground who ventures to touch it. In putting the shocking device out of action, first open the primary switch, then open the secondary switch, and haul up the chain.

The accompanying diagram will make clear the method of connecting up. The existing ignition circuits are shown in dotted lines, thin for low-tension wires, heavy for high-tension wires, the new connections being shown as continuous lines, likewise thin and heavy for the primary and secondary circuits.

In this diagram, B is the spare battery used exclusively for shocking purposes. S and S1 are switches controlling the primary and secondary circuits; on the latter is the length of chain trailing on the ground. P and P1 are the primary coil connections, while H T is the secondary or high-tension coil terminal. S2 is the switch on the ordinary ignition circuit, B1 being the ignition battery. C is the timer, and D the distributor from a four-cylinder engine using one coil. Cy 1, 2, 3, 4, are the four-cylinder heads, into which the sparking plugs are screwed.

In a car using a number of coils in place of a distributor, any one of the coils could be used for shocking purposes, the others not being interfered with at all. With magneto-fired engines, the connections are exceedingly simple, an additional high-tension wire merely being taken from that terminal to which a wire already is attached from the distributor or sparking plug, to the chain as above indicated, a switch being introduced somewhere along its course to break the shocking circuit when not required. With magneto ignition, the engine must be running all the time the shocking device is in operation, in order to furnish the necessary current. After having installed such a shocking system, doubtless the owner who would chastise the pestiferous small boy will find that he himself is the first to get the benefit of it until he remembers that it is there and working.

PREDICTING THE FUTURE MOTOR OMNIBUS.

Although the motor omnibus has come to stay, it grows daily more and more evident that it will not—indeed, cannot—remain in its present form, concludes the London *Times*, which says:

"Before it can be ranked as a successful vehicle it must be considerably reduced in weight, and therefore to some extent in carrying capacity. If the reform does not come from within, it will assuredly be enforced from without for the wear and tear of suburban roads, the extremely serious deterioration of roadside property, due to the noise and vibration inseparable from these huge cars, are raising most strenuous opposition. A few days ago a deputation from Paris arrived in London for the purpose of investigating the traffic problem as dealt with in this city, and particularly with regard to the motor omnibus question. This deputation had an audience with the chief commissioner of police, who, in the course of his remarks, gave it as his opinion that the motor omnibus of the future must be a much smaller, lighter and quieter vehicle than that at present in use."

LETTERS INTERESTING AND INSTRUCTIVE

Some Questions on Track Records and Ignition.

Editor THE AUTOMOBILE:

[794.]—In your issue of June 6 you credit Cedrino in a Fiat with a world's record for middleweight cars. Did not Frank Kulick, in a 20-horsepower Ford, made up of two Ford double-opposed engines, make a better record than that in the Fall of 1904? I believe he also holds the middleweight one-mile record, generally credited to Cedrino.

Apropos of the spark question, I have a car equipped with a Remy magneto. I find that on trying a vibrator coil on same when testing for a missfire, that I cannot take a certain hill on the high speed, though the miss is gone; that with the magneto on I ascend easily, though I change nothing else but the coil, and give the right spark amount of spark advance in each case, using even the same distributor and commutator. Could you investigate the question and state the result in your "Letters Interesting and Instructive" columns, and oblige a three-years' subscriber? T. C. B.

Los Angeles, Cal.

The then existing records for middle-weight cars were broken by Frank Kulick at Narragansett Park, Providence, R. I., September 10, 1904, the times being as follows: One mile, 1:04 1-5; two miles, 2:05; three miles, 3:06 2-5; four miles, 4:07 4-5; five miles, 5:09 4-5. Present records for middle-weight class are: One mile, 0:56 2-5; two miles, 1:52 4-5; three miles, 2:49, made by E. Cedrino, in Fiat, Empire City track, October 27, 1906; four miles, 4:01 3-5, made by Jos. Tracy, in a Renault, Empire City track, September 24, 1904; five miles, 5:00, made by Guy Vaughn, in a Decauville, Syracuse, September 18, 1905. Frank Kulick holds all track records up to and including five miles for light-weight cars, made in a Ford, at Empire City track, the times being as follows: One mile, :55; two miles, 1:54; three miles, 2:51, all made November 8, 1904; four miles, 3:48 2-5; five miles, 4:43 3-5, both made October 29, that year. The time for the one mile was intermediate.

As the magneto generates an alternating current it naturally cannot be used to the same effect with a vibrator coil as with a plain coil, the alternations of the current taking the place of the trembler. When the armature of the trembler is attracted by the core of the coil becoming magnetic the circuit is broken and the surge of current thus sent through the primary is transformed in the secondary winding of the coil. The spring causes the armature to return the moment the magnetic force ceases, owing to the rupture of the current and the moment the blade comes back it again makes contact and the operation is repeated. A magneto, on the other hand, produces a current that surges from zero to its maximum constantly, first in one direction and then in the reverse, hence its name of alternating. The coil in consequence starts to act on the first alternation, but when the trembler returns and again makes contact there is no current and the coil is momentarily dead, which would naturally cause the motor to miss, if its proper time of firing should occur at that point. The armature of the magneto only carries a single winding and, as arranged for ignition purposes, there is a contact breaker set to act at the point of maximum current flux, or peak of the wave as it is termed, so that only two current impulses are utilized per revolution—exactly the number required to fire a four-cylinder engine, the magneto being geared to run at the same speed as the mainshaft of the motor. For a more detailed explanation of the action of the magneto we would refer you to the article which appeared in the issue of THE AUTOMOBILE of April 4, under the title of "How the Magneto is Utilized for Ignition." This makes no definite reference to the use of the coil in the connection explained above, but illustrates the character of the current generated and the manner in which it is utilized on the car. Only a plain or non-vibrating coil should be used with a magneto of the Remy type. A trembler coil may be employed by screwing the former down fast so that it cannot vibrate, but the results are not apt to be as good as with the coil wound especially for the current generated by the magneto.

Proper Point of Stroke at Which to Fire Charge.

Editor THE AUTOMOBILE:

[795.]—I have a 1907 Model G, four-cylinder Franklin, dimensions 3 1-4-inch bore and stroke. I would like to learn through "The Automobile" at what point of the compression stroke the cylinder should fire to obtain the best results with the spark advanced. The cylinder now fires about 1-4 inch before the compression stroke is complete. Is this correct? CARTON.

St. Louis, Mo.

As the motor of your car is designed to run at a pretty high normal rate of speed, we should think that the position of firing you mention would be about the correct one for the following reasons. The object to be attained is the explosion of the charge at the moment when it will exert its maximum expansive force at the beginning of the power stroke. If it could be assumed that the closing of the primary circuit by the timer of the ignition system, the occurrence of the spark in the cylinder and the subsequent explosion of the charge all took place so close together as to be practically simultaneous, the proper time for the spark to occur would be exactly at the upper dead center or finish of the compression stroke. But such is not the case. There are both electrical and mechanical lags in the ignition system to be accounted for such as the time required to saturate the core of the coil, inertia of the trembler, and the like, and it is also thought that the rate of flame propagation in the mixture is such that this also has to be taken into consideration. This last is a mooted point and doubtless the rate of flame propagation in a compressed mixture is so extremely high that this is not a factor and has no bearing on the subject whatever. The quarter inch before the completion of the compression stroke that you mention is usually termed "lead" and is generally measured in degrees on the arc of the crank circle and marked accordingly on the periphery of the flywheel in order that the motor may be properly reassembled and timed after having been dismounted.

Another Bad Case Similar to No. 781.

Editor THE AUTOMOBILE:

[796.]—Letter No. 781, under heading of "A Bad Case of Heating," describes exactly the trouble I am now having with same kind of car—Marion light touring car, 1905 model. I bought this car new in April, 1905. Ran it the first season over our very rough and hilly roads something over 5,000 miles, carrying four people. Practically, I had no trouble; never broke down or had to be towed. Last season ran the car something over 2,000 miles. As I own two cars, I do not run either all the time.

This season I am using the Marion as a runabout, and am having just the same trouble as the writer of letter No. 781. To-day is a hot one, 90 or over in the shade. Ran the Marion to Concord (nine miles); on my way home I had trouble; every part of car, including the two passengers, got sizzling hot, engine so hot that it would cook anything; gear drum on countershaft and muffler sizzled. Had to stop engine frequently to let it cool. I cannot say where the trouble is, but I mean to find out and fix it myself if possible.

No. 781 and I are in the same fix. If he can locate the trouble I hope he will write you. If I do, I will.

Air-cooling may not always work as it should; neither does water-cooling. I have seen very high-powered water-cooled cars which got so hot that it came pretty near being dry steam which came out of top of radiator. C. F. M. STARK.

Dunbarton, N. H.

Your description of the trouble would seem to tally so closely with that given by correspondent No. 781, that undoubtedly the trouble will most likely be found to be the same or something very much akin. The fact that the entire engine and its piping back through the muffler get hot appears to support the rich mixture theory most strongly, as the latter would continue burning not alone on its way out through the exhaust valve but also through the remainder of the piping and so heat the muffler. After a good cleaning up try running on as weak a mixture as the engine will possibly turn over on and then give the fuel admission adjustment a fraction of a turn or so and see

if the trouble does not abate. As mentioned in the answer referred to, a quick-burning mixture is absolutely essential to successful air-cooling, particularly in the early cars of this type.

How Expressions of Analyses Are Read.

Editor THE AUTOMOBILE:

[797.]—I would like to know how to read the expressions generally used in the written analyses of steel. For instance, take the following, referring to the composition of a certain specimen of steel. How would this data be read?

Carbon	Sulphur	Nickel
0.45	0.017	1.17

Also in the report of the strength of aluminum castings published in "The Automobile" of June 6, 1907, I find the following, as expressive of the physical properties of the sample, and would like to know their significance, as well as the way they are read.

Ex-4"	Con.
8.25	9.5 per cent.

Hoping that I have made clear to you the information that I desire, and thanking you for the trouble, C. C. CROSS.

North Tarrytown, New York.

In speaking of the quantities of the various constituents of a sample of steel as determined by an analysis such as is set forth in your letter, engineers usually speak of these as "carbon point four five," also this particular ingredient is frequently referred to as "10 point carbon, 20 point carbon,," and the like. The other quantities are most generally referred to as mentioned just above; that is, "Sulphur point nought one seven," "nickel one point one seven or one point seventeen." Regarding the other abbreviations these refer to the properties of the test piece, the first representing the amount of expansion in the piece tested, the dimension following "ex." or expansion, having reference to the length of the piece in question, so that this should be read, "Expansion in four inches, 8.25 per cent." The second abbreviation refers to the amount of contraction on test in the same piece, so that the dimension is naturally not repeated.

THE WHITE CAR THAT MADE THE HILL-CLIMBS.

Editor THE AUTOMOBILE:

[798.]—I note that in your account of the Cleveland hill-climb in your June 20 issue, in referring to the car with which Walter White made his record climb, you say it is "almost a duplicate in appearance to the famous 'Whistling Billy' of track racing days." This statement is correct except in the following particulars:

Wheelbase.
Clearance.
Length over all.
Method of suspending frame from axle.
Size of all working parts.
Position of generator.
Position of engine.
Position of gasoline tank.
Position of driver's seat.
Position of steering wheel (as regards which side of car).
Position of water tank.
Style and size of bonnet, etc.

I can readily see that your Cleveland correspondent has taken the view, which is so popular with the gasoline people, that our hill-climbing car is a very special affair. As a matter of fact, it is exactly like every other 30-horsepower car that we have built this season, except that it is "tuned up" for hill-climbing work (it is another demonstration of the flexibility of steam power that a standard car, by putting an hour's work on it, can be made to deliver much more power than that for which it is ordinarily adjusted to give).

By "tuning up" I would say, first of all, that, as we can remove our condenser (just as the gasoline cars remove their mufflers), it is possible for us to use a special bonnet, which, of course, gives the car a somewhat rakish appearance. The driver's seat is a slight affair of aluminum placed directly over the generator. We run the car at slightly higher pressure than is required for ordinary touring service. In order to run a White car at a higher pressure, all you need to do is to adjust the "water regulator" with a pair of plyers, as any driver of a White can do in five minutes on the road. We also have a hotter fire than usual by carrying more air pressure on our gasoline tank. This also is something which can be done to any White car ever built at the option of the driver, as any air pressure may be secured by simply putting your foot on the pedal. These, in full, are the changes necessary to make any White car into a "special White racer." We look upon it, as I said before, as simply emphasizing the flexibility of the White car whereby you can get from it, under all conditions, all the power necessary.

Hill-climbing is the true test of the power of an automobile, and it seems to me significant that we should beat, by such a large margin, such cars as the Darracq, which won the '05 Vanderbilt race, and the six-cylinder Stearns. The former represents the highest development in horsepower per pound of weight. The latter represents the largest cylinder displacement which can be considered as practical. We have an engine the dimensions of which are in all 3x6x4 1-2, and the following is certainly a proposition worth considering:

What would we do to the gasoline cars if we should ever consider it necessary or desirable to add one or two inches to our engine dimensions?

Another interesting fact is that the new regulating system has shown itself to be equally efficient with high pressure as with normal pressures, and all that is necessary for the driver of a "special White racer" to do is to "Just open the throttle and steer."

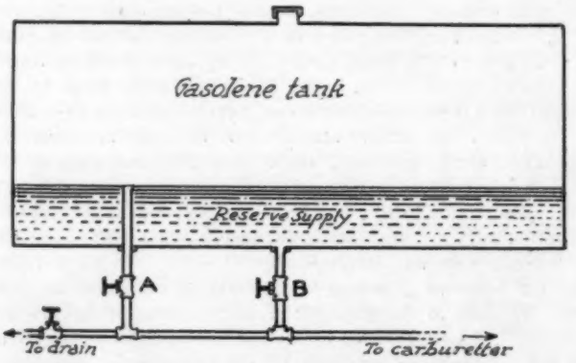
THE WHITE COMPANY,
per R. H. Johnston.

New York City.

PROVIDING A RESERVE SUPPLY OF GASOLINE.

Editor THE AUTOMOBILE:

[799.]—I have noted a recent inquiry in your Letters Interesting and Instructive Department, regarding some simple means of fitting a reserve tank to a car so that an emergency supply of gasoline can always be carried. I am enclosing you a sketch showing how I have done this on my car. There are two connections or supply outlets from the tank, one of which reaches up three inches above the bottom of the tank, while the other is level with it; the latter constitutes the draw-off for the reserve supply while the former is the regular supply outlet. This valve (A) is allowed to remain open at all times, while that in the emergency pipe is kept religiously closed. By turning the valve B, a six-gallon reserve supply is tapped and that is certainly sufficient to reach a depot. It is a simple and inexpensive expedient and one that has never failed me.



SIMPLE METHOD OF PROVIDING EMERGENCY FUEL SUPPLY.

OLD TIMER.

FOUR YEARS' STEADY RUNNING ON SOLID TIRES.

Editor THE AUTOMOBILE:

[800.]—Answering the letter in your June 13 issue, in which Sol Williams, Cedar Point, Kan., gives "An Opinion on Solid Tires for Small Cars," kindly permit me to say (to your readers who may construe his experience as conclusive evidence) that there are durable cars on the market, also successful solid tires, and that thousands of the latter combination have been used constantly the past four years with entire satisfaction.

Mr. Williams unsuspectingly pays a tribute to solid tires when he says that after two years' use his tires are for sale at half price, admitting that his tires are good for at least four years. He intensifies the compliment by describing the rugged, rocky roads over which his tires have been driven, showing the durability and long life of solids. Mr. Williams may have adopted what he thought would be more resilient spring suspension, but the new springs may be too heavy for the weight of his car, and therefore too stiff to absorb vibration properly, and attributes the trouble all to the tires. If it were usual that such results followed the adoption of solid tires, we would coincide with Mr. Williams, but our experience in the solid tire has been entirely the contrary, and we can show 500 testimonial letters received from patrons in past four years, and all treat the solid tire with words of commendation. We have fitted every type of car from the lightest Orient buckboard to the heavy, luxurious Peerless and Thomas limousines.

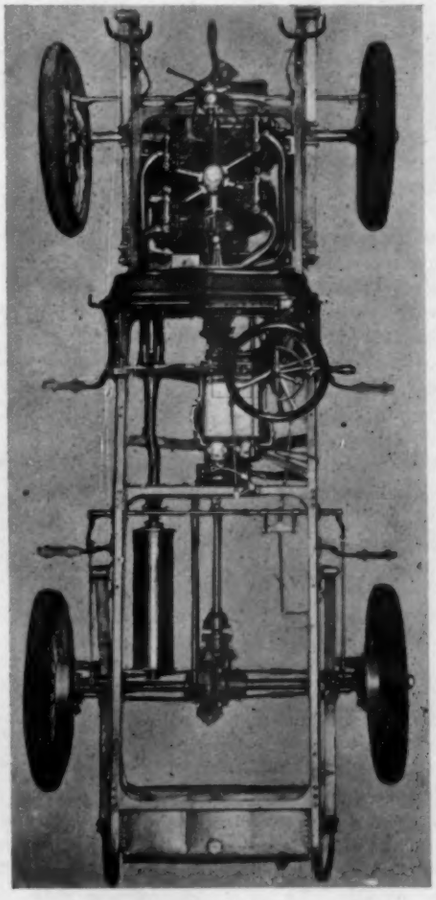
Akron, O. A. G. HENDEL.

ENTERING the automobile field a couple of years ago by building a model car with a number of interesting and novel features, the Modern Tool Company of Erie, Pa., put its product through a 10,000-mile test and has just begun to make deliveries to the public of its Payne-Modern automobile. A description of the models is certainly opportune and will doubtless prove interesting to all students of automobiles.

Three models are being produced, a four and six-cylinder touring car and a six-cylinder runabout. The six-cylinder chassis is somewhat heavier than the four-cylinder model, but otherwise the two types are similar. An illustration is shown of the complete four-cylinder chassis and of the six-cylinder touring car.

The motor which is air-cooled on all models, is carried forward under the regulation type of bonnet, is attached direct to the side frame, and has separately cast cylinders set at an angle of 60 degrees. An advantage of this type of engine is that a great saving of space is effected, this being specially noticeable with a six-cylinder motor, and a better circulation of air to the cylinders is secured. All cylinders, on both four and six models, are 4 inches bore by 4 1-2 inches stroke, of refined iron, put through a special process before casting. Under test the cylinders are subjected to a hydraulic pressure of 2,000 pounds to the square inch. Cylinders, piston rings, shafts, etc., are ground dead true and do not vary one-thousandth of an inch.

The cylinders are cooled by means of a peculiar copper fin made in two halves swaged into the iron by means of a split collar and steel ball. This has the advantage of copper radiation, several times as efficient as cast iron, but avoiding the former trouble experienced in making a close union between iron and copper. These cylinders, after being rough-bored and fins mounted, are heated before grinding to relieve any strain that might be in the metal. The air is circulated by means of two fans, one on the periphery of the flywheel and one governor-controlled fan in front of the cylinders. A peculiarity of the action of the fan is that it furnishes a maximum amount of air when the car is at a low rate of speed ascending a steep hill and the throttle wide open, which corresponds to the greatest heating period of an air-cooled motor. It is well known that in an ordinary air-cooled car as the engine slows down the speed of the fan also is retarded. A further feature which adds to the success of an air-cooled motor is the exhaust valve, its location and operating mechanism. On the Payne-Modern the valve itself is located on top of the cylinder and the valve pallet in the plane of the cylinder wall in such a manner that when the exhaust valve is opened to relieve the cylinder of the heated gases the gas does not have to pass up through the head of the cylinder or out through the side of the cylinder head, but is at once released. This feature adds to the cooling effect of an air-cooled cylinder, especially inasmuch as the valves themselves are abnormally large.



CHASSIS WITH FOUR-CYLINDER MOTOR.

Valve operation is by a peculiar cam motion in which the cam shaft is offset in relation to the crankshaft, the cam plungers also being offset. Each exhaust valve is provided with its own exhaust pipe, having an internal diameter of 1 3-4 inches, open enough to relieve the back pressure to such an extent that there is no appreciable effect on a gauge. The valves are operated by a walking beam and are held on their seats by a conical spring resting on a spider, which serves to prevent them coming in contact with any heated portion of the exhaust cage. They are held on a taper seat in the cylinder head by means of two studs and a bridge provided with two pressure screws, the exhaust and inlet pipes being attached to the valve cages by means of a breech lock nut. To remove the valve as a unit complete with its springs, etc., it is but necessary to give the inlet pipe or exhaust pipe lock nut an eighth-inch turn and re-

lieve the pressure screws in the bridge, allowing this latter to be swung out of the way and the valve removed complete. High speed steel, which serves to prevent any scalding effect from the heat, is employed for the valve stems; the valve pallets are made of 30 per cent. nickel steel. The distributing chamber has certain peculiarities and appears to provide a solution of the difficulty of obtaining an equal quantity of gas to all six cylinders. The carbureter being designed to slightly enrich the mixture at low engine speeds and make it weaker at high speeds, a wide range of engine flexibility is obtained.

The four-cylinder engine is attached to the side members of the frame by means of four lugs; the six-cylinder motor has three point suspension. Although the main bearings of the engine are extremely long, the rear bearing being 1 3-4 inches by 4 inches and the center bearing 1 3-4 by 3 inches, the overall length of the crankcase is only 36 inches. For the engine bearings a peculiar bronze which is neither phosphor nor white bronze, but which has remarkable wearing qualities, is employed.

The commutator is located on the right hand side of the engine in an accessible position and near it is a small automatic air pump for forcing air to the gasoline tank at the rear. The supply of gasoline is fed to a small auxiliary tank on the dashboard, traveling by gravity to the carbureter. On the dashboard is also a small air gauge and relief valve, which may be adjusted to relieve the pressure at any desired point. One pound pressure is usually sufficient. Lubrication is by means of a McCord oiler under a cowl on the dashboard, driven from the camshaft by a V belt, each cylinder being lubricated separately.

An internal expansion clutch, covered with a special material which will not burn, is employed. Four speeds and reverse are obtained by sliding transmission of the selective type, the lay shaft and all gears being idle on the direct drive. The shafts are lubricated by means of ring oilers; bearings are of phosphor bronze. A detailed examination of the transmission shows that the lay shaft is made hollow and provided with a plunger called a timing knuckle. Balls are set in the recess in the hollow shaft and by means of slipping the timing knuckle are forced to engage in a recess in the gears. The shape of the recess in the gears being such as to make a pocket the same shape as the balls, the strain is not a shearing one, but rather a crushing one from all sides; when it is known that a crushing strain on a 1-2 inch ball (the size used in the transmission) amounts to 39,000 pounds, it is obvious that it would be impossible to crush a sphere from all sides. On the main shaft are two lock rings operating in conjunction with the timing knuckle by means of cams, so that the lay shaft may be set in motion and the male shaft disconnected for operating the gears; similarly for direct drive the front lock ring unlocks the gears driving the lay shaft and the rear ring unlocks the cone on the gears of the male shaft, at the same time locking the male and female shafts. Special Tungsten steel is employed for all operating parts in the transmission, the gears and shafts being of chrome nickel steel and all parts hardened and ground. The gear shipping lever has been placed under the steering wheel, it being believed that this position allows of more convenient operation than the more familiar side lever.

Final drive is by propeller shaft and bevel gears to rear live axle of the floating type, carrying bearings outside the tube. On the six-cylinder machine there are four brakes on the rear axle; the four-cylinder model has two brakes on the rear axle and one on the transmission.

Engine control is by means of spark and throttle lever located above the steering wheel. The change speed gear being operated by a lever under the steering wheel, as already described, and all brakes being controlled by foot levers, the machine can be entirely operated without any necessity for reaching outside, everything being close at hand when the storm side curtains are closed down. There are three foot pedals, the right hand one operating the running brake, the center one the clutch, and the remaining one controlling the ratchet or emergency brake interlocked with the clutch.

BOOKS FOR AUTOMOBILISTS.

Michelin's French Guide Book.—The 1897 edition of the French road book published by Michelin & Cie., the tire manufacturers of Clermont-Ferrand, is a carefully compiled and well-produced volume of over 600 pages, giving all the information which tourists in France are likely to need. It contains an alphabetic list of towns, each of which has a clear road map, and information on hotels, garages and automobile dealers; distances to nearest towns and points of interest in the neighborhood are also mentioned. Great care is taken in recommending only the best hotels and those garages where the traveler will be sure of finding good accommodations. Customs, laws and regulations naturally find a place in the book. A valuable feature is a series of colored maps of various sections of France, and a large colored road map of the entire country. Automobilists visiting Europe can obtain copies of the *Guide Michelin* free on board steamships of the French, White Star, and Hamburg-American lines.

Navigating the Air.—Under the auspices of the Aero Club of America an interesting illustrated volume has just been published by Doubleday, Page & Co., of New York, under the title "Navigating the Air." The volume is a record of personal experiences of the twenty-four men most distinguished to-day in the art and science of flying. Such authorities as Alexander Graham Bell announce that the problem of aerial transportation has been solved, and the book gives for the first time an authentic summary of the present state of this science. Among the contributors are Dr. Bell, the Wright Brothers, Lieut. Lahm, John P. Holland and other famous aeronautical specialists. No attempt is made to trace the history of the new art of navigating the airs, but each writer deals with his own connection with the art in a manner calculated to interest both the practical aeronaut and the general reader. The book contains 32 pages of photographs showing important developments in aerial navigation.

French Automobile Trade Annual.—The thirteenth Annuaire Général de l'Automobile, a 500-page directory of the automobile industry in Europe, has just been issued by Thevin & Cie., 1 Rue Villaret-de-Joyeuse, Paris. Published in French by a French firm, it contains a very complete list, classified according to industries, of all firms directly or indirectly connected with the automobile industry. Constructors and dealers in other European countries are given in almost as thorough a manner. Sections of the book include: Alphabetic list of all dealers in Paris and district; names and addresses of all automobile constructors in Europe; dealers, agents and garage proprietors; manufacturers of accessories and supplies; a list of all automobile owners in France, and a list of associations, clubs, newspapers and reviews existing in Europe. Persons having business connections with Europe will find the volume exceedingly useful for ready reference.

Road Handbook of the Automobile Club of France.—Visitors to Europe will find a quantity of useful information in the official Annuaire de Route published by the Automobile Club of France, Place de la Concorde, Paris, the eighth edition of which has just appeared. French laws, regulations and taxes, which are always a source of trouble to American visitors, are fully dealt with. A feature of the book is a series of sketches of every important town in France, showing all main roads in and out, and the names of all recommended hotels, together with a statement of the accommodation they can offer. Twenty-five other countries are similarly dealt with. The book is printed in French.

Automobile Industry in Italy.—A guide to the rapidly developing automobile industry in Italy has been produced by L'Automobile, 12 Via Aurelio Saffi, Milano, consisting of a complete comparative table of the products of every Italian factory and a detailed alphabetic description of mechanical features, extending over about thirty pages.

Denver as an Automobile Town

DENVER, June 21.—Geographically considered, Denver occupies a central location between the Great Lakes and Mississippi river on the east, and the Pacific coast on the west, and is the midway point of the central transcontinental railway system, with its branches and connecting systems north and south. Naturally it possesses a splendid position for the facilitation of business—an essential characteristic for the automobile selling industry. Coupled with this excellent mid-west location is the altitude of the city above sea level, some 5,000 feet, at the eastern base of the Rocky mountains, and at the western termination of the great central plateau. The highly rarified atmosphere of the locality makes automobiling a pastime of exceptional pleasure and health-giving qualities, and the excellent roads that abound in the vicinity contribute the finishing touches to the autoist's sense of satisfaction.

There are any number of fine runs out of Denver, either to the mountains on the west, or over the prairies on the east, with the mountains always in sight, to remind one of the giant upheaval of the earth's crust some millions of years ago, which rent the great continental plain in twain, and tossed heavenward the towering peaks and crags to serve forever as a tribute to the majesty of nature's forces. There is much to praise and admire in a run over the prairie roads these fine spring days, with such a scenic setting in the west, and there is equally much that is attractive in a tour of the mountain roads, with their grades and turns and splendid outlooks. It all depends upon the mood you are in, and which will most appeal to you.

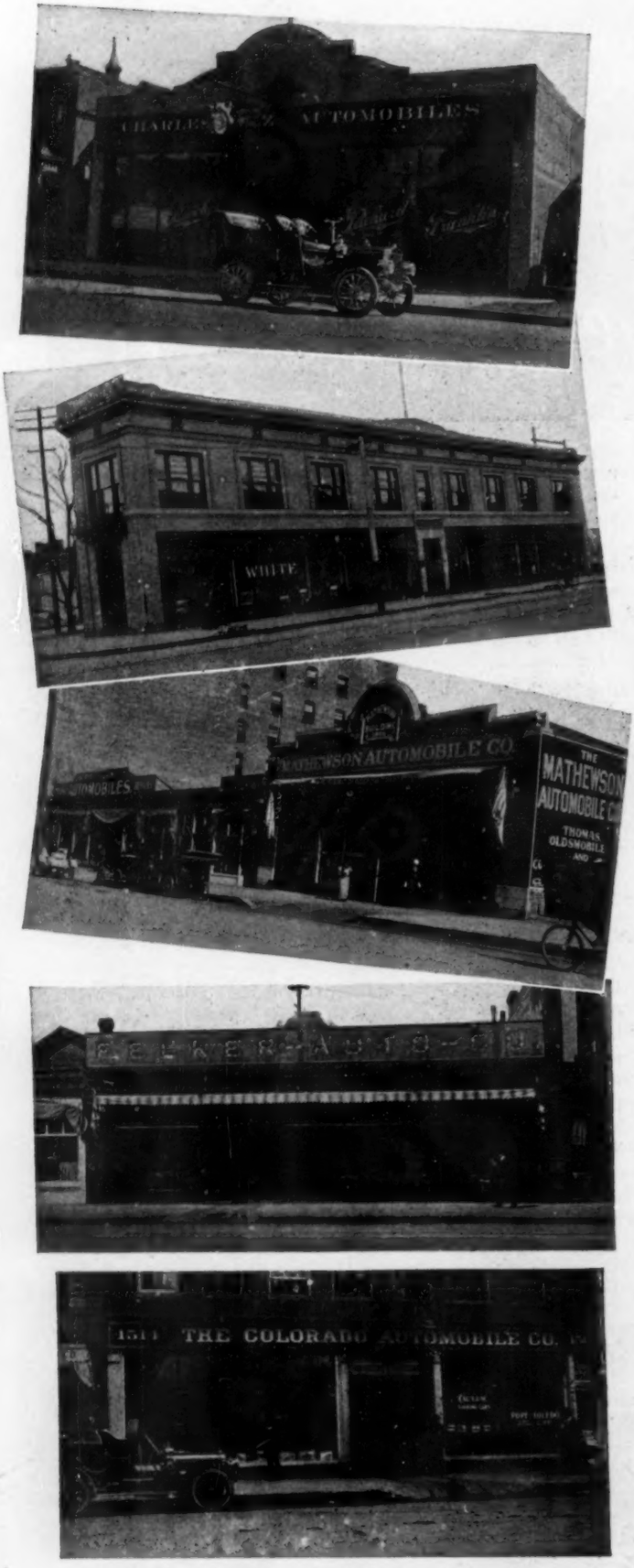
A favorite run is that to the prairie by the way of Mount View boulevard, a broad roadway that starts at City Park, the largest of the city's breathing grounds. The road bed is a natural one, and is in fine condition at all seasons of the year, and right here it might be stated that Denver is an all-the-year autoing city. During the past winter there have been but six days of snowy weather. The run to Colorado Springs, a distance of 81 miles by road to the south, is one of rare attractiveness to tourists, and is the course upon which the local speed enthusiasts burn up their energy—and their tires. The road extends along the foothills of the Rockies in close proximity to the tracks of the Denver and Rio Grande Railway. There is a climb of some 2,200 feet on the route that leads direct to the Springs, and on the return trip a rise of 1,000 feet has to be negotiated. The present holder of the record over this course is E. Linn Mathewson, of this city, who, in a 40-horsepower Oldsmobile, on March 22 drove to Colorado Springs in two hours and eleven minutes, and made the return trip to Denver in two hours and four minutes, clipping 41 minutes, all told, from the previous record, held by Marvin H. Fechter in a Reo. As the one-stop express trains take two hours and fifteen minutes for the trip each way, it will be seen that the autoing Denverites exceed the speed limit a little, and may be said to be "going some."

To the north of Denver the roads are not as good as they are to the south and east.

AUTOING ON MOUNT VIEW BOULEVARD.

LARNING HIS PASSAGE.

The Cherrelyn horse car runs between Englewood and Cherrelyn, two of Denver's suburbs. The horse pulls the car up hill for about one and one-half miles and then rides back on the rear platform.



REPRESENTATIVE HOUSES IN DENVER'S AUTO ROW.

One soon encounters open country and road which stretches away to Greeley and Cheyenne, while fairly good in spots, is not all that can be desired. The mountains remain in view for miles, although the Medicine Bow range gradually melts away to the northwest, diminishing in the horizon as one goes further north.

Denver has speedily adapted itself to the resultant conditions that come from the activity of the trade and the enthusiasm of the buyer. The organization of the Colorado Automobile Club was the first expression and outgrowth of the local automobiling sentiment in and about Denver, and is the pioneer club of the State, and the leading spirit in the recently organized State Automobile Association, which is a component body of the American Automobile Association. A beautiful home for the Colorado Automobile Club is now assured, and the house will be built on a site selected on Mount View boulevard. Dr. F. L. Bartlett, the energetic president of the club, is the head of the committee in charge of the work.

The development of the trade in Denver within the past few years has been astonishing. There are two manufacturers here, one producing a gasoline car, and the other an electric. The Colburn Automobile Company has recently moved into a well-appointed factory at Colfax avenue and Fifteenth street, and is now producing a four-cylinder 25-horsepower car, with a sliding gear transmission, using the selective type of operation, and having four forward speeds with direct drive on the third. The car is known as the Colburn "Skyscraper," and with full equipment, including top, will sell at $3,250. In the line of electrics made in this city, there is the Fritchle car, made by Oliver P. Fritchle at his Clarkson street factory. He began the manufacture of electrics two years ago, and the designs embody the runabout Stanhope and Victoria types.

There are nearly a score of auto selling agencies in Denver, and all the leading makes are represented. Trade has opened up with a rush this spring, and everyone connected with the selling industry here takes a roseate view of the future. A decided impetus was given to business by the recent local automobile show, which was held in Coliseum Hall last April, and which was a great success.

But with all Denver has already accomplished in the comparatively short period that the city has been a factor in the industry and the sport of automobiling, we are far from content. The local automobile club has demonstrated that it is an organization that can do things or, to put it in a slightly better way, "get things done," and after all that is what counts. Plans have been made to establish four main highways leading from the city to outlying points on the four points of the compass, and both the Chamber of Commerce and the Real Estate Exchange have been enlisted in aid of the project. The scheme is to make Brighton, Golden, Bennett and Littleton the main connecting points for these driveways, the plan being to connect Bennett either by way of Colfax avenue or Mountview boulevard to a crossroad along the Union Pacific tracks, thence to the end. Downing avenue will be the main northern road as far as Thirty-sixth street, and from there it would turn to Wewetta street and thence out to Brighton. South Broadway or South Logan is suggested as the approach to the southern outlet, the proposal being to include Washington Park and thence south to Littleton, while the Golden road is planned to cross the Fourteenth street viaduct, along Cherry Creek drive to Lake Place, thence to Boulevard F, and from there on West Thirty-eighth avenue will form the western route. At a recent meeting to further the project, T. K. Bartlett of the Good Roads Association presided, E. A. Colburn and W. A. Hoover represented the club, J. P. Hymer was a delegate from the Real Estate Exchange, and W. M. Downing and C. L. Burpee sat for the Chamber of Commerce. The plan is to ask the municipality to put these roadways in shape and maintain them as far as the county lines, while the counties are to be asked to maintain their portions. George E. Kessler, the boulevard and park expert from Kansas City, has been called in consultation and is preparing detailed plans for the improvement.

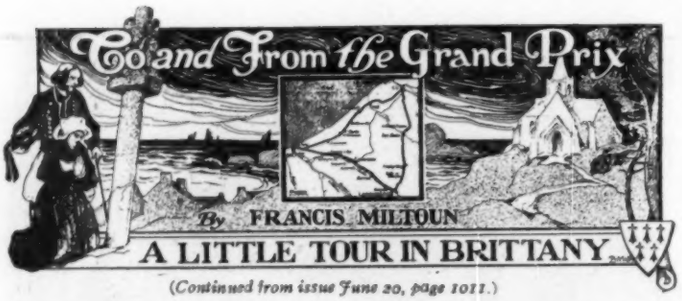
That Denver is keenly interested in every phase of automobiling is shown by the enthusiasm displayed by its advocates in every branch. The race meeting held on Memorial Day was the most ambitious event of its kind ever held here while the Orphans' Day celebration of June 12 proved that Denver's autoists are as charitable as those of other large cities the country over, though unfortunately that does not entirely serve to convey the meaning it should, as the call for cars did not meet with as generous a response as should have been forthcoming for such a worthy object. But the result showed very plainly what can be done and there is very little doubt that next year people will realize better the object to be accomplished and fall into line in greater numbers to aid the strenuous endeavors of the local club to be responsible for a bright day in the lives of the many homeless children—a day that they will look forward to as the average youngster does to the Fourth and Christmas.

E. Linn Mathewson and H. S. Brinker were the stars of the Decoration Day meet here and autoists, not to mention a large part of the general populace, including, of course, those juvenile hero worshipers that abound here as everywhere, did not let the opportunity pass to show their appreciation of automobile racing on a circular track, as it was naturally the only kind of auto racing they have ever had a chance to see. No less than 6,000 went to Overland Park, the scene of the meet, and the amount of enthusiasm displayed was all out of proportion to the attendance, though this represented a showing far in excess of what has characterized meets of far greater importance that have been held and featured with far greater attractions in Eastern cities, even when the track racing game was at its height. Mathewson has been dubbed the Barney Oldfield of Colorado and Brinker the "little dare devil" for their work with Thomas "forties." Overland Park was the scene of the meet and Denver turned out 6,000 strong to cheer.

When, after some pretty work, Mathewson lowered the world's fifty-mile track record for stock cars from 1:03:19 3-4 to 55:43 2-5 there was an ovation tendered him such as has seldom been granted to any victor of the mile circle here or anywhere else. Pandemonium reigned supreme for a good quarter hour. Following the Mexican custom in showing approval of a particularly clever coup in the bull ring, a large part of the spectators tossed their hats, canes and everything else throwable onto the track and then followed themselves, so that Mathewson was almost mobbed. He had everything his own from start to finish, the 20-horsepower Stevens-Duryea, driven by Ralph W. Smith, which finished second, being two miles behind, while Brinker in the other Thomas "forty" was the victim of a mistaken flag signal, the latter being waved at him as an indication that he was entering on his last lap, when in reality he had only completed forty-eight laps all told. Minor derangements caused him to come to a stop twice during the course of the race, by which he was lapped twice by Mathewson, but in spite of this he stood a good chance to finish a close second had it not been for the error in signaling. Maxwell, who drove the Stevens-Duryea, looked a sure winner at first, holding the lead for six miles, when he was compelled to stop. Mathewson then took first and was not headed again throughout the entire fifty-mile run.

The first race of the day was a five-mile event, with the same entrants as the fifty-mile endurance race, Mathewson finishing an eighth of a mile ahead of Maxwell in the Stevens, Brinker not being in the running owing to two of the plugs giving out at the same time. The only entries in the next race were the 20-horsepower Stevens-Duryea, driven by Maxwell, and Fred Powell in a 30-horsepower Pope-Hartford, the former easily taking the honors. The fourth event was another five-mile race and in this Brinker crossed the line an eighth of a mile ahead of Mathewson, who had been delayed by engine trouble. The two rivals met again in the ten-mile handicap event, which was the seventh on the program, both starting from scratch. Although his time was not very fast—the best mile being done in 1:05 1-2—Brinker again led Mathewson by an eighth of a mile.

A FEW MORE OF DENVER'S LEADING AUTO HOUSES.



(Continued from issue June 20, page 1011.)

FIFTEEN kilometers eastward from Pont Aven one strikes the route nationale again at Quimperlé, charmingly situated on a little tidewater river with a couple of admirable old churches, some curious houses and a good café-hotel, the Lion d'Or, on the quai, where you will call if you are wise.

Lorient is twenty-one kilometers east of Quimperlé and is an ugly, unappealing seaport, once the headquarters of the French East India trade. It is the least lovely large town in France, in spite of the fact that it is endowed with a magnificent situation. The hotels and *mécaniciens* are on the same level of mediocrity. The inner man and the automobile will find nothing here that may not be had better elsewhere.

Ten kilometers after Lorient is Hennebont, situated on the estuary of a deep-cut little river, the Blavet. It is all Lorient is not, an ideally picturesque spot with charming promenades along the river banks, some old moss-grown fortifications, innumerable curious old houses, a stupendous late Gothic church and a most excellent hotel with "good enough" garage accommodation. If you have slept at Pont Aven cut your journey here and take déjeuner in this all-sufficient little Breton Hotel de France at Hennebont.

If time presses keep on to Auray, where, at the Lion d'Or, you will do equally well, twenty-eight kilometers farther on.

The monuments of Auray and roundabout are very numerous and interesting. There is a pilgrimage to be made to Ste. Anne d'Auray—where on the 25th of July in each year is held a great religious fête—and the excursion down the great peninsula of Quiberon and through the *Lignes de Carnac,* the name given to a regiment of great stone *menhirs* like those at Stonehenge in England, only here there are thousands instead of scores.

A Glimpse at the Summer Retreat of the "Divine Sarah."

Off-shore, a dozen kilometers, is Belle-Ile, where Fouquet ensconced himself when he fled from the wrath of his King after the great fête of Vaux, and where Aramis of the "Trois Mousquetaires" became a landed proprietor. To-day Belle-Ile is a little island kingdom all by itself, with a capital, Le Palais, a local newspaper and hotels and restaurants, even though a good half of the population have never set foot on the mainland. There are no automobiles on the island, and the greatest celebrity is Sarah Bernhardt, who has a summer home here.

From Auray to Vannes is twenty-odd kilometers, skirting the north shore of the Morbihan, a great inland bay like the Great South Bay of Long Island, with characteristics much the same, except that the picturesque peasant is wanting in America and we have to content ourselves with a gray-bearded old sailor in oilskins and a sou'wester instead of a gay gallant with a hat with fluttering ribbons on it, an embroidered vest and tight-fitting trousers with fifty brass buttons down the outside seams.

On the road hereabouts the Breton types are seen at their best, young men and maidens and old men and market-women, but all of them picturesquely clad. They invariably walk in the middle of the road and it takes more than a mere "honk" to make them move; a shrill screech of a siren will do it, but that's about all. It is bad form to use a siren in a French town.

Another warning right here, though it might well have been put at the beginning of this article. There is an infrequency of automobiles in Brittany, and for that reason live stock, particularly horses, donkeys and mules, are easily frightened. There's no pleasure or satisfaction in bolting a donkey cart into a ditch and spilling out its invariable load of lovely femininity—for they are lovely, the little Breton maids. Go slow, then, and be rewarded by smiles instead of frowns.

At all times, when stopping, look carefully over your tires and extract the *sabot* nails, the great flat headed hobnails of the Breton peasant's sabots which drop out in dry weather when the wood around them shrinks. They don't puncture all at once—if you are using what the French call *pneumatiques extra-fortes.* This variety is indeed a necessity all over Europe if one is to avoid slight punctures; these short, pointed, flat-headed nails will not penetrate if your tires are thick enough; if they are not you will suffer continual annoying punctures. In Brittany one must be more careful than elsewhere.

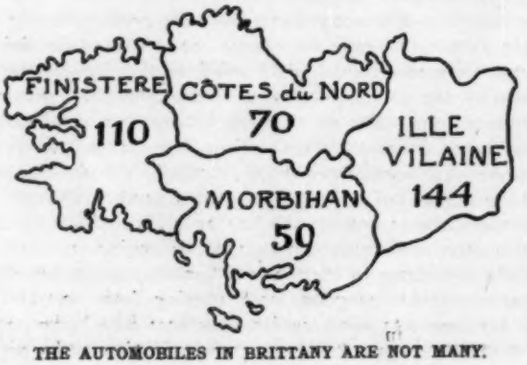
Vannes is a great, big, overgrown country town. It rises to the dignity of being a Préfecture, but is a sad, dull place with inefficient hotels and only interesting for the visitor because of its accessibility to the Golfe of the Morbihan, its old houses, its thirteenth century cathedral, its old city walls and the grim donjon known as the Tour Connétable, in 1387 the prison of Olivier de Clisson.

Pass Vannes by so far as eating or sleeping goes if possible, and keep on to Rochefort-en-Terre or Redon; you will do far better at the Hotel le Cadre at the former place or the Hotel de la Post at the latter. Each abounds in character, a vague term, but one understood of the traveled person. Rochefort-en-Terre is a little artists' paradise exploited almost entirely by French and Americans; *jamais les Anglais,* says the patron of its little next-to-the-soil hotel.

Railroad Crossings Which Only Open Under Protest.

If the atmosphere here is *too* artistic another twenty kilometers brings you to Redon, and if you don't have to wait an interminable while at the railway gates you will be very pleased indeed with your déjeuner eaten in the *salle à manger* of the Hotel de la Poste—one might say the *musée,* for the walls are hung with all sorts of curious trumpery—some of it good, but certainly as great a hodge-podge as was ever collected by a cranky hotel proprietor. Barring this idiosyncrasy he knows well how to run a hotel, though it is abominably situated opposite the railway station and has no pretence to architectural beauty of any kind whatever.

The gates of the railway crossings throughout Brittany, and frequently in other parts of France as well, are often kept closed. This is a protection for the public, of course, and cannot be complained of, beyond wishing that the day may soon come when *all* grade crossings shall be abolished. It's annoying, nevertheless, to be held up at a French railway crossing, or *passage à niveau* to speak the vernacular. Usually it is guarded by a feminine personality of uncertain age, who simply tells you in response to an inquiry, *"On ne passe pas!"* "Where is the train?" you ask, with an absolutely clear view up and down the line for five kilometers, *"Il peut venir,"* she tells you coldly. "Yes, truly, it *may* come; but why does it not come?" You wait perhaps, three, five, ten,



THE AUTOMOBILES IN BRITTANY ARE NOT MANY.

or fifteen minutes at this Robespierre of *passages à niveau*, but the woman is incorruptible—as she should be, that we will not deny. Yes, it *may* come! And when it does come, and you have overheated your motor running it free, or have perhaps stopped it and by some mal-chance cannot make it start up again, you have emotions which cannot even be described, much less put into decent print.

From Redon to Chateaubriant is fifty-four kilometers, and if you have had enough for the day the modest little Hôtel de la Poste will care for you admirably. You will eat of simple fare served by a dainty coiffed Breton maid, and most likely somewhere in the dinner's menu will be a *boudin*, which is a black sausage made of congealed pig's blood—and some other things. You needn't eat it if you don't like; there will be plenty else.

There is a moyenage chateau here with pepper-box towers and all the ear-marks of the best Renaissance architecture, and there is a legend concerning the horrors of the time when a certain Comtesse de Chateaubriant was first almost starved to death in a dungeon and then cut into pieces by the surgeons upon the orders of her unworthy spouse. So altogether—what with the *boudin* and the drawing and quartering and a church bell that clangs loudly every quarter hour—there is every prospect of pleasant dreams.

It is from Chateaubriant that the chateau country of Touraine can best be tapped on returning from the Breton tour.

THE PICTURESQUE COIFFES OF BRITTANY.

It is seventy-five kilometers to Angers, the southern gateway, where is opened up the whole Loire Valley and the watersheds of the Vienne, the Indre and the Cher, embracing the best of Renaissance chateaux and the "Garden of France."

As Fast as You Please, but Have an Eye on the Gendarme.

The route back to Paris taking in the chateau country is scarcely prolonged two hundred and fifty killometers, while the direct road via Laval is a trifle less than four hundred.

As a variation, and since after a Breton tour hills may be presumed to have no horrors for an automobilist, another cross-country route to Paris, omitting the chateau country proper, is via Serge, 40 kilometers; Chateau-Gontier, 24; La Flèche, 54; le Lude, 19; Chateau du Loire, 21, and Vendome, 59. It is a most charming and unconventional itinerary, entirely by second and third class roads, but most excellent roads they are, crossed only here and there by routes nationales, but nearly as good; and when one does get a long, silent stretch, with a gentle slope downhill, he may make any speed he likes and no one to say him nay unless he meets with a brace of strolling gendarmes who are everywhere *in the most unexpected places*—in France. *Méfiez vous, alors!*

Vendome is better known than the last half-dozen large towns, and is a most interesting place. Hotel accommodation is scant and not remarkable, though good. But the architectural monuments, the flamboyant Gothic church, the Hotel de Ville, and the Chateau Donjon are worth doing, if only by moonlight after dinner, when peasants and blue hussars wander aimlessly.

From Vendome to Chateaudun is forty-one kilometers, with nothing to hold one's speed down save an excessively dangerous *passage à niveau* at Monplaisir, thirteen kilometers from Vendome, and another at Cloyes, a dozen kilometers before arriving at Chateaudun, with its memories of 1870-71.

Chateaudun (Hôtel du Bon Labourer) is a good place for déjeuner or for the night, but Bonneval, fourteen kilometers farther on toward Chartres, is better—for déjeuner at any rate. The Hôtel de France will give you about the best country fare you will get in France—Chickens, veal, crisp salads, asparagus, strawberries and the like. All are in season between May and September; at any rate, they have four or five months of strawberries—such strawberries as are found only in France.

By Vitray-en-Beauce, through the great grain-growing region of France, one arrives at Chartres, thirty kilometers from Bonneval. From Chartres it is plain sailing and easy going to Paris, via either Rambouillet or Ablis. In either case, via either Versailles or Sceaux, one strikes the terrible *pavé* of suburban Paris twenty kilometers before the capital is finally reached.

If one is going east to Fontainbleau or the Côte d'Or the route from Chartres is via Ablis, Etamps and la Ferté-Alais. If the north, Normandy or the seaport towns in connection with England are the objectives, suburban Paris can be avoided by crossing the Foret de Rambouillet and through Houdan to Mantes.

To sum up: The roads of Brittany, the main roads, are excellent, but hilly, and so long as one is ready for surprises of sharp ascents and descents, particularly in the towns, for innumerable sabot nails in his pneumatics, for frightened donkeys, geese and peasants, and for gendarmes always looking for trouble the Breton tour is as enjoyable as any in France.

One must not forget that it is six hundred kilometers out and back from Paris or the Seine Valley before one comes to Brittany proper, and that this will take two or three days travelling, going and coming, besides the eight hundred or more kilometers making the Breton circuit. The itinerary is as follows:

Place	Kilometers	Hotels
Versailles	16	
Chartres	73	
Nogent-le-Rotrou	59	Hotel du Dauphin
Le Mans	65	de France

Place.	Kilometers.	Hotel.
Laval	80	de Paris
Vitre	37	des Voyageurs
Fougères	28	St. Jacques
Dol-de-Bretagne	49	de la Grande Maison
Dinan	27	de Bretagne
St. Malo	29	de France et Chateaubriand
Lamballe	43	de France
St. Brieuc	20	d'Angleterre
Guingamp	32	Grand Hotel de l'Ouest
Detour: Plouha, Paimpoul, Treguier, Lannion.		
Morlaix	54	de l'Europe
St. Jean-du-Doigt	..	
Landivisiau	23	
Landerneau	16	de l'Univers
Plougastel-Daoulas	11	des Voyageurs
Camaret	..	
Crozon	35	
Chateaulin	33	de la Grande Maison
Quimper	28	de l'Epée
Detour: Douarnenez, Pont Croix, Pont l'Abbé, Penmarc'h.		
Rosporden	..	
Concarneau	23	Hotel des Voyageurs
Pont Aven	15	Villa Julia
Quimperle	17	Lion d'Or
Lorient	21	
Hennebont	10	de France
Auray	28	Lion d'Or
Vannes	18	
Rochefort-en-Terre	..	le Cadre
Redon	61	de la Poste
Vendome	204	du Grand Cerf
Chateaudun	39	Bon Labourer
Bonneval	14	de France
Chartres	30	Duc de Chartres
Paris	88	

Guides and Maps.

Joanne's "La Bretagne," 7 fr. 50c. Published by Hachette & Cie., Paris.

Cartes Taride, Nos. 5, 5bis, 8, 9, 1 fr. each. Published by A. Taride, 20 Boulevard St. Denis, Paris.

Carte Touriste de la France, Nos. 4 and 5, 2 fr. 50c. each. Published by the Touring Club de France, 65 Avenue de la Grande Armée, Paris.

Carte de l'Etat Major, scale 1-80000, 30c. per sheet. Obtainable in all large towns.

"Sur-Route" Atlas-Guide, 3 fr. 50c. Published by Hachette & Cie., Paris.

"Rambles in Normandy" and "Rambles in Brittany," by Francis Miltoun. Published by L. C. Page & Co., Boston.

"GENDARMES ARE EVERYWHERE."

BAY STATE HELPS AUTOISTS OBSERVE LAW.

BOSTON, June 24.—In order to assist automobilists in observing the law and to provide the local municipal authorities with a uniform method of warning drivers of motor vehicles, the Massachusetts Highway Commission has just adopted a new series of road signs and plans to supply them to local authorities at a low cost. The signs are on iron plates 16 by 24 inches and are enameled in green with white letters similar to the speed signs which have been in use by the commission for a year or more. They are designed to be erected at right angles to the highway at points 150 feet distant from entering roads, cross roads, corners and curves, at which points the law requires that the speed shall not be in excess of eight miles an hour. In the series is another sign designed to be erected 150 feet from the so-called "thickly settled" limits, within which the speed is 12 miles an hour.

Already the commission has had orders for about 125 of these signs by six or eight towns, and as soon as it becomes generally known that they are available it is anticipated that the signs will be much in demand. The commission believes that with these signs in general use there will be much less friction between automobilists and local authorities, for they will enable the tourist to know just what conditions he is approaching, and if he is as familiar with the law as he should be, there will be no excuse for excessive speed. The signs will also tend, it is thought, to do away with the local speed rules, which are the bane of the automobilist, because by using these signs the authorities may in effect reduce the speed of automobiles at the dangerous points on a road without making a regulation covering the entire road.

With the extra appropriation of $3,000, which the Legislature granted the Massachusetts Highway Commission to put into effect the system of examinations for professional chauffeurs, outlined in THE AUTOMOBILE of May 9, the commission has now established a complete plan for examinations covering Boston and eight of the principal cities of the State. Two men are engaged in this work, and while one remains in Boston for the purpose of examining applicants every weekday, the other makes a circuit of the State each week, holding examinations in Pittsfield, Springfield, Worcester, Fitchburg, New Bedford, Brockton, Lowell and Salem. About fifty applicants are now being examined each week and it has been found that since the examination system was put in force the applicants are much more familiar with the law and the rules of the roads as well as with the management of their machines than they were formerly. Very few now fail on the written test, the majority of failures being on the technical side. At least 75 per cent. of the applicants, however, are now receiving licenses. The new plan is approved by owners and several men who have purchased cars have brought their chauffeurs and cars to the offices of the Highway Commission and have accompanied them through the driving test.

THAT BOULEVARD TO THE WHITE MTS.

PORTSMOUTH, N. H., June 24.—The construction of the Merrimac Valley highway, authorized by the last session of the New Hampshire legislature, and on which work will soon be in progress, will mean a great advance toward the completion of a good boulevard from Boston to the White Mountains. This line, which will be about 65 miles in length, will be a broad, macadamized road, connecting with the Massachusetts State highway at Tyngsboro and extending northward to Lake Winnepesaukee. It will run through the cities of Nashua, Manchester, Concord, Franklin, and Laconia, in the order named. The expenses for the construction of the road will be jointly defrayed by the State and by the towns and cities through which it will pass.

Automobile "scorching" will hereafter be decidedly unpopular in this neighborhood, as the police have received instructions to arrest all indulging in the practice, or who otherwise fail to comply with the police regulations governing the speed of automobiles, the rate being eight miles an hour.

EXPANSE NEAR BETHPAGE SHOWING PARKWAY STAKED.

BAD WASHOUT MADE CAREFUL DRIVING NECESSARY.

OVER THE LONG ISLAND PARKWAY COURSE

By H. A. GRANT.

IT was a natural bit of curiosity that prompted us to make a run over the Long Island Parkway—that is to be. At present it is a cross-country scramble over widely diversified country, that frequently calls for more acrobatic tricks on the part of the auto than its maker ever intended it to perform. On the great Hempstead Plains, the entrance-hall to the Parkway, there is but a narrow track which has never received much of the tender care of man, but which in a few brief months will be transformed into a broad, rolling highway, where the only speed limit will be that of the car. As far as the eye can see is barren, open country, that breeds a longing to rush away into space at fantastic speed.

Over the broad, grassy plains near Bethpage, as devoid of life as any spot in the far West, except for the presence of the Long Island Railroad, the ground had been staked out for the proposed course, and we stopped the car to get a picture of the very spot on which the Parkway race course will be built. It is an ideal spot for speed, with wide-open land losing itself on the horizon. In its present natural condition to rush over its surface—if that were possible—would fail to produce any sensation of rapid travel, so vast is the expanse; but when a ribbon of road has been rolled out nothing will have been taken from the vastness of the scene and an element will have been added permitting the human mind to grasp the rate at which space is being annihilated.

Further eastward there is more variety—brushes, through wild woodland, with a track so narrow that the undergrowth swishes along the sides of the car, and at times a springy bough strikes you in the face with a vigorous smack. This will be one of the spots where the traveler will linger to breathe in the beauties of the land. At times there are vistas of sea and land that hold you in contemplation; then again there is bad going, with dangerous washouts that call for undivided attention to keep the car right side up. At present it is too strenuous an occupation, crossing over the Long Island Parkway; but when it has been rolled and hammered and pummeled into the highway it is intended to be, there will be a variety of sensations. At times the only fascination will be to hold the wheel of a high-powered car; at other moments you will be content to jog along on a little single-cylinder trailer.

The residents along the route all seem enthusiastic over the proposed highway; and well they may, for it is the only thing that can make a residential section of an otherwise forsaken country. To be able, almost at the gates of the great city, to find an outlet where dirt and noise can be left behind, and where the fingers can coax the throttle without the eye being in mortal terror of alighting on a blue uniform, would be sufficient pleasure for the automobilist, even if there were no beauty spots.

Certainly this parkway, the first of its kind in the world—for, although others have talked of special motor roads, it has been left to young America to set the lead—will be the precursor of a good-roads movement over the entire country. They will not all be parkways, naturally, but they will all benefit by the example of the perfect highway, on which the skilled engineer to-day and the sturdy laborer to-morrow are to work with might and main.

ABOLISHING CONNECTICUT'S TOLL BRIDGES.

HARTFORD, CONN., June 24.—There is now pending before the Connecticut State legislature a bill providing for the elimination of tolls of the bridges which cross the Connecticut river at Warehouse Point and Thompsonville. The Hon. H. R. Coffin, representative from the town of Windsor Locks, in the house of representatives, is doing his utmost to bring about the passage of the bill. Mr. Coffin has occasion to cross these bridges several times a day. As he uses a 45-horsepower seven-passenger touring car, the tax charges therefor are abominable.

Fred Wright, of the Electric Vehicle Company's test crew, recently crossed the river at Windsor Locks in a 24-horsepower Columbia and was taxed 35 cents for doing so. Wright was so disgusted that he threatened to climb Church street hill on the high, despite the protests of his companion, a mechanic from the factory. Subsequently he made good his threat.

Should this bill pass the legislature, autoists in general will rejoice. These taxes are regarded as relics of the past and there is small reason for their existence. If concerted effort amounts to anything, the bill should pass.

GOOD ROADS NEWS FROM THE FAR WEST.

TACOMA, WASH., June 20.—N. L. Taylor is completing the work of outlining a system of boulevards for this city. The general scheme provides for beginning at the north end of Yakima avenue, thence to Point Defiance Park, around the park along the bluff, overlooking the Sound, and along the ridge of the Narrows to the city limits. Picturesque Old Town is brought into the system. A southern link will run from the south end of Tacoma avenue to McKinley Park. Two other links run to other sections of the city. The estimated cost is $1,500,000.

State-aid Road Approved for King County.

SEATTLE, WASH., June 20.—The State Board of Highway Commissioners has approved plans for a State-aid road in King county and has elected Surveyor Valentine as superintendent of construction. The estimated cost is $37,832.57, of which State and county bear an equal share. The road begins at the Riverton drawbridge and continues to Renton Junction, a distance of 15,487 feet. It will be a continuation of the macadam road from the limits of Georgetown to Riverton.

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H. M. SWETLAND, President

EDITORIAL DEPARTMENT:

A. G. BATCHELDER, Managing Editor
R. J. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
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A. B. SWETLAND, Business Manager
L. R. SMITH FRANK B. BARNETT
W. I. RALPH, 1035 Old South Building, Boston, Mass.
C. H. GURNETT, H. H. GILL, 836 Monadnock Block, Chicago, Ill.

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Unparalleled Success of the Sealed Bonnet Contest. Never has the outcome so completely confounded the prophets as was the case in the jocularly dubbed "millinery race" of the Automobile Club of America. When the subject was first broached there was a general howl of disapproval. "Why make it four days when two will be more than enough to finish even the best of them?" said these dissenters. But after the first day's successful completion of the scheduled run by every one of the forty-seven starters, tire trouble alone having been the only thing to mar the event, and of that there was remarkably little, one and all changed their tune completely. "Give us something easy," they said. "We could keep this up for a week and still be going some," was the universal opinion.

Nothing proved so conclusively that lifting the bonnet to tinker here and adjust there is something that is the outgrowth of habit rather than the call of necessity. That more than 80 per cent. of all the cars that started finished with clean scores—and they could finish in no other way under the rules of the contest—is most significant. It proves beyond a doubt the extremely high factor of reliability that now characterizes the modern automobile, and it also means that the Automobile Club of America will have to go into the wholesale jewelry business in order to supply the demand for the cups that are the reward of a perfect score. Equally remarkable is the trivial nature of the few mishaps that put the unfortunate few out of the running. All told, they would not suffice to put one car out for more than half an hour. With a single exception, and that car gave audible signs of being a cripple right at the start, the troubles encountered were of the most insignificant kind, a broken valve spring probably being the most serious on record, while parted battery wires and the necessity for a little steering gear adjustment which eliminated two cars, show how very slight was the attention required. No contest ever held served to demonstrate the reliability of the up-to-date automobile so tellingly, as well as how very difficult it is to devise some form of competition that will serve to eliminate many cars, even though the test be prolonged.

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What Will Be the Next Form of Elimination? As the direct outcome of the great success that has marked the running of the Automobile Club of America's Sealed Bonnet Contest, there has immediately arisen the query, What next? The rules of the latter were considered so severe at first that it was hardly thought possible that more than a few would survive—and that more by good luck than good management or inherent merit on the part of the car itself, as a broken porcelain spark plug, or a parted battery connection, certainly is no disparagement to a car. It did not take long to show that 600 to 700 miles would never prove a conclusive test under what had in a few hours' running become magically transformed into the most liberal of rules, instead of restrictions that spelled failure for the many.

It is quite evident that the modern stock car will run a long distance at fifteen miles an hour, or a much higher rate of speed, without the slightest necessity for adjustment or stoppage other than that called for by needed replenishments of fuel, oil and water, or those occasioned by tire misfortunes. Taking into account the performances of the many cars in last week's contest and their almost uniform success, it would seem that nothing short of a restricted fuel allowance, in addition to the conditions already imposed, would suffice to cause a greater number to fall by the wayside. Reliability has been developed to such an extent that its relative importance has been greatly diminished; the same is true of endurance. It may safely be said that the modern car possesses both these cardinal virtues in high degree, whatever its make, from all of which it would seem that the time has come to couple with them the matter of economy in all future contests, as it is to the "all around" car that the palm should rightly be awarded.

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Conflict of the Sales and Engineering Departments. In every manufacturing business there are two forces constantly at work, and unfortunately they do not always work in unison toward the same end. They are represented by the manufacturing and the selling interests of the concern and in no other industry have they clashed to such an extent as is true of automobile building. Your average automobile manufacturer is a man of ideas and no mean engineering skill, or, if not, he surrounds himself with the best talent of the kind. In either case the result is the same. The car should be representative of the latest advances in design and, more than that, it should reflect the skill of its designer—it should bristle with original features, resolves the engineer, who goes ahead along that line.

"But," says the selling force, "that is not what the public wants. Cut them out and give us something that sells," and the matter-of-fact sales manager, who may not know the exhaust from the inlet, throws cold water on brilliant engineering designs and outlines his conception of the selling car. The war is then on. It is a familiar story to those in the trade, and its outcome depends on which side gives in first. Needless to add, engineering failures have brought the most thoroughly organized and equipped selling departments down in more than one instance. The first half decade of automobile building in this country was marked by a broad trail of them, and only the financial strength of some of the concerns involved averted total ruin. The public is an ass, no doubt, but while it is all very well to build cars after a theory, they must be sold, and no one knows what will sell better than the sales manager. There is another side to it, of course—the demand on the engineering department for new *talking points* each season—but that is another story.

HARRY FOSDICK REMOVES TO BROADWAY.

Right upon the heels of the announcement that E. R. Hollander had severed his connection with the Hol-Tan Company, which he was instrumental in organizing, came one of even greater import to the fraternity at large, and that was to the effect that Harry Fosdick would again be seen on New York's automobile row, this time as the vice-president of the Hol-Tan Company. Mr. Fosdick has already tendered his resignation as president of the Harry Fosdick Company of Boston, which handles the Thomas and Fiat cars in that city, though it is understood that he will still retain his interest in the Boston firm. His resignation takes effect July 1 and he will be succeeded by Alfred N. Robbins.

HARRY FOSDICK.

Mr. Fosdick has been closely identified with the business of selling automobiles ever since there have been such things. He discovered the Hub when its sole asset in the shape of an automobile representation consisted of two small stores which handled steamers, and he was one of the two. With the decline of the little "tea-kettles" in popular favor he became manager of the Winton branch house and he was not long in making the fact known that there was a live man at the head of the Winton interests in the down-east seat of learning and culture. He blazed a Winton trail all over New England. For the past two years he has been president of the company that bears his name and has been largely instrumental in fostering automobile interests in Boston generally, being treasurer of the Boston Automobile Dealers' Association, a member of the touring committee of the Bay State Automobile Association, and a member of this year's show committee, which did such good work.

STRENUOUS LIFE FOR THE FOREIGNERS.

Foreign machines are likely to appear more frequently in American touring and other contests than they have done in the past. At a recent meeting of the Importers' Automobile Salon it was unanimously decided to appoint a committee of four, consisting of Paul Lacroix (Renault), Gaston R. Rheims (C. G. V.), Percy Owen (Biachi), and G. M. MacWilliams (Darracq) to be called the Importers' Trade Contests Committee, to make inquiries and ascertain what contests would tend to elevate the sport and bring out reliable and desirable qualities of cars. G. M. MacWilliams, the originator of the movement, declared to THE AUTOMOBILE representative that he had proposed this committee in order that there should be more adequate representation of the foreign element in American contests. "The committee," he stated, "will examine the conditions of all tests, and if they approve of them will recommend members of the Importers' Salon to enter cars. Although they will be ready to offer suggestions to organizing associations, it is not their intention to conduct any competitions on their own behalf. One or two members ridiculed the notion of foreign cars entering competitions, but the majority declared that in the future they would enter all tests approved by the Trade Contests Committee. As an example of the influence of the movement, had this step been taken a few weeks earlier there would have been, instead of two Darracqs and a Rolls-Royce in the Sealed Bonnet Contest, a group of sixteen or twenty foreign machines."

NEW YORK STATE ASSOCIATION TO MEET HERE.

For the purpose of considering amendments to its constitution, as well as to consider such other business as may come before it, the Board of Directors of the New York State Automobile Association will hold a meeting at the offices of the American Automobile Association, 437 Fifth avenue, New York City, at noon on Friday, June 28.

NEW DEVELOPMENTS IN SHOW SITUATION.

Recently S. A. Miles, manager of the Chicago show, which is to be held from November 30 to December 7 this year, sent out an announcement that the allotments of space for the two Chicago shows—that is, the exhibit of pleasure vehicles and accessories in the Coliseum and First Regiment Armory and that of commercial vehicles at the Seventh Regiment Armory—would be made on July 1, and further, that applications, in order to be considered in the first allotment, would have to be in hand by June 29, application blanks and diagrams being forwarded with the announcement. All of which showed that the National Association and Mr. Miles were up betimes on show business, as it still lacks five months of the Chicago dates.

Whether this announcement, made in the regular course of routine business, had any bearing upon later developments in the show situation, that have literally sprung out of the ground as it were, is a question. But that developments of a rather revolutionary nature are pending seems to be assured. It is a matter of common surmise that the National Association of Automobile Manufacturers, under whose auspices the Chicago show is held, and the Association of Licensed Automobile Manufacturers, the upholders of the Selden patent, are closely affiliated, and there is a feeling in the camp of the American Motor Car Manufacturers' Association that the latter element has become dominant, with the result that independent makers are to be discriminated against. There will accordingly be a meeting of the latter Association in New York City to-day, June 27, to decide whether to exhibit at Chicago this year or not, and it is thought that any action taken will be followed by the Motor and Accessory Manufacturers, Inc. As the members of these two associations have always formed a very substantial part of the Windy City exhibit, their defection is a matter of some moment. Whether the question of holding an entirely independent show in the West, as has been the case in New York, will be brought up at the meeting, remains to be seen, but judging from the present outlook there will be a break.

BIG ENTRY FOR THE POINT BREEZE 24-HOUR.

PHILADELPHIA, June 24.—Next Friday and Saturday's twice-round-the-clock event at Point Breeze promises to be the most important event of the kind, as regards the number of entries, which has yet been held in this country. The Quaker City Motor Club, which is managing the affair, will spend considerable money getting the track in shape, with a view of preventing its wearing into ruts, as it did in last month's race. Six thousand gallons of crude oil will be worked into the track this week and heavy rollers will be at work from dawn to dark pounding the stubborn clay into a solid level surface. Although the entries have not yet closed, there are already two Lozier, two Wayne, two Frayer-Miller, and the same number of Dragon cars listed to start, besides one each of the Mitchell, Darracq, Pennsylvania, American Mercedes, Stearns and Oldsmobile. At least one more entry is expected and possibly two, and if so Starter Wayne Davis will be compelled to line up the field in two rows, as the track is not sufficiently wide to accommodate all of them abreast.

GOLD CUP TOUR DEPARTURE DELAYED.

Latest despatches from Georges Dupuy, manager of the Gold Cup tour, state that after running through the whole of France, north of Spain, and a large portion of Italy, the Stearns and its occupants are at Rome, preparing to strike northward into Austria and Germany for the final stages of the journey.

Owing to the late start and various delays on the road the pilot car is far behind the schedule. "The machine is pulling splendidly," says the Gold Cup pioneer, "but 200 kilometers a day for 50 days in succession is a terrible strain on the driver." In a few days the party will sail for New York, arriving here early in July, when a definite announcement will immediately be made on the date of departure of the main body.

JUNETIME DOINGS OF THE AUTO CLUBS

Worcester Holds Successful Decorative Parade.

WORCESTER, MASS., June 24.—This city had a four-days old home carnival last week, and Thursday afternoon the feature of the closing day was an automobile parade. This parade was originally planned by the carnival management to be held in connection with a coaching parade and show of workhorses. Members of Worcester Automobile Club showed the fallacy of this and succeeded in getting the autos into a separate division,

A BEAUTY-LADEN PRIZE-WINNING THOMAS FLYER.

and with prefatory policemen mounted on motorcycles, and the band on a motor truck, were able to roll along at a fair rate of speed through the business section of the city and past City Hall, where Mayor John T. Duggan reviewed it.

There were nearly fifty cars, mostly decorated, in the line. The largest cup offered was awarded to John S. Harrington, who put his Thomas Flyer into the competition decorated with pink and white and pretty girls. A cup for the best equipped touring car, occupants and their costumes to be inclined in the make-up of the car, went to a Rainier car from the Buck-Price Co., Boston, Fred Smith driving. A cup for the best decorated runabout went to Oakley S. Walker, who with his daughter, Miss Dorothy Waiker, traveled in a Ford runabout with tasteful decorations. The committee of award were George A. Campbell, P. B. Talbott and Dr. Roy M. Garfield.

Worcester Automobile Club members are planning for summer runs. Among them Col. Fergus A. Easton will take his Stevens-Duryea to the White Mountains, thence across New Hampshire and Vermont to Montreal, thence to Toronto, Kingston and Hamilton and home by way of Niagara Falls and across New York State. C. C. Milton and J. E. Fuller are planning a trip through Vermont to Ticonderoga and the Lake George region, and home by way of Saratoga and the Berkshires. Lyman F. Gordon is planning to initiate a new Packard car by accepting delivery at the factory at Detroit and running it home.

Syracuse Autoists Enjoy an Era of Prosperity.

SYRACUSE, N. Y., June 25.—Forthy-three members were added to the Automobile Club of Syracuse at its most recent meeting, the largest number elected at any one time since the club was organized. The club now has a membership of 155. Secretary Forman W. Wilkinson was requested to communicate with the authorities in an effort to have the highway between Fayetteville and Oneida placed in better condition, as this route is a favorite one with automobilists and is in sad need of attention. It was decided to issue a folder for general distribution calling attention to the objects of the club and what has already been accomplished.

Comment was made upon the large danger signs placed at the top of the Tully hill, and it was announced that information had been secured by President H. W. Smith and others for the placing in Onondaga County of one hundred additional route and danger signs which have been ordered. As many of the roads in this section of the State abound in bad spots, these signs will be much appreciated.

A motion was passed rescinding a resolution adopted at a former meeting requesting Senator Horace White to dispose of his stock in one of the toll road companies. It was found that the club had been misinformed and that Senator White did not own any stock in a toll road. A letter of apology was sent some time ago.

Georgian Automobilists Organize at Atlanta.

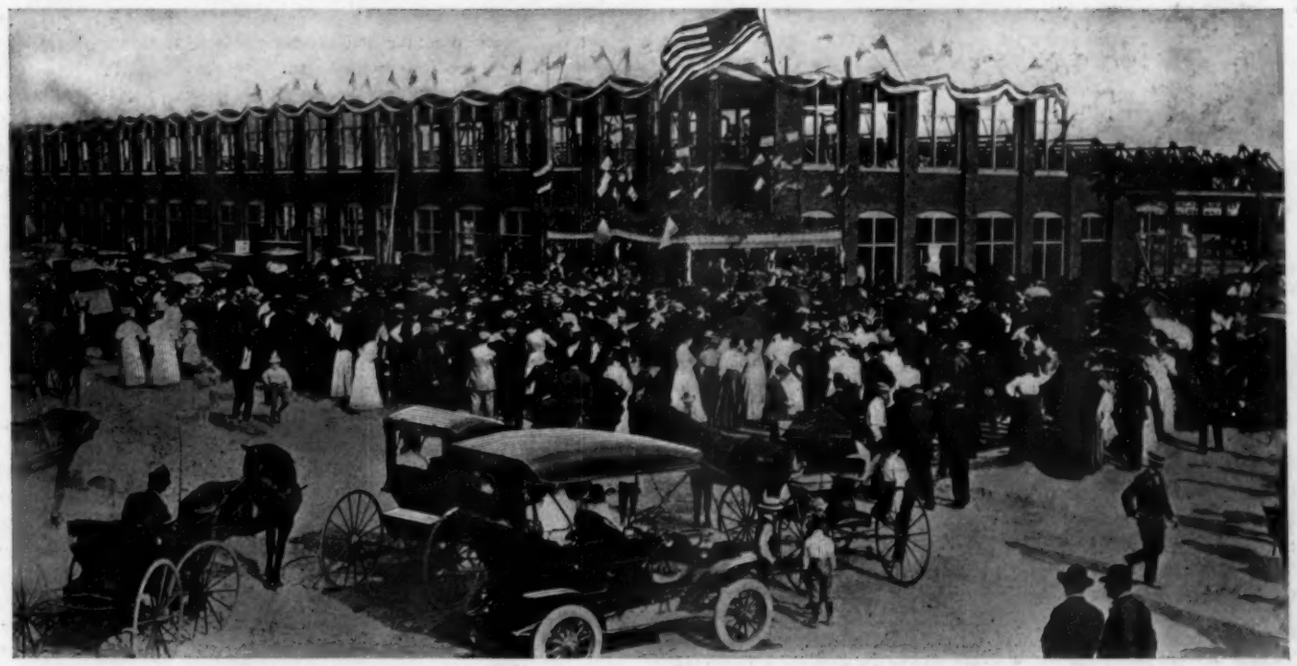
ATLANTA, GA., June 24.—For the purpose of having representation with the American Automobile Association, a meeting was held last week in the Piedmont Hotel by owners of machines in Atlanta and the Atlanta Automobile and Goods Roads Association was organized. The new organization is a business one and has for its purpose the securing of proper legislation for the protection of auto owners, the betterment of the roads and advantages in accident policies and machine insurance.

The meeting was well attended and the following officers were elected: President, F. L. Seeley; vice-presidents, E. H. Inman, R. F. Shedden and J. P. Stevens; secretary, E. H. Crocker; treasurer, Asa G. Candler, Jr. All owners of autos are eligible and the dues are two dollars a year.

L. I. A. C. Becomes Joint Promoter of Brighton Beach Race.

The Long Island Automobile Club has become associated with the United States Motor Racing Association in the running of the twenty-four-hour Automobile Endurance Derby, to be held at Brighton Beach track on August 9-10. The well-known Brooklyn organization will appoint all the officials for the contest and otherwise generally supervise it. R. G. Kelsey, chairman of the contest committee of the Long Island club, is taking a very active part in arranging the details. Plans have been made to include a fifty and a hundred mile race in the Brighton Beach program, holding these events in the afternoon and early evening of August 9, starting the twenty-four-hour race later the same day.

TYPES OF THE DANGER AND DIRECTION SIGNS WHICH ARE BEING ERECTED BY THE AUTOMOBILE CLUB OF SYRACUSE.



GAYLY DECORATED MAXWELL-BRISCOE FACTORY BUILDINGS AND THE CROWD THAT WITNESSED THE CEREMONY.

NEW MAXWELL PLANT DEDICATED.

NEWCASTLE, IND., June 22.—This is the day that the famous discovery of Newcastle by Benjamin Briscoe is being celebrated. Of course, Newcastle has been here for some time on the same spot, but no one in the automobile industry knew anything about it until the far-seeing Briscoe put the inducements of Muncie, Marion, South Bend, Elkhart and Kokomo behind him and struck out on his own line. Newcastle had a good deal to do with it, too, because while the others were haggling over terms its progressive citizens formed the Industrial Company and landed the Maxwell-Briscoe Motor Company in its midst. Consequently Newcastle is celebrating to-day and a right royal celebration it is, too. The occasion is the laying of the corner-stone of the immense new plant where Maxwells are to be turned out, but unlike most of the formal functions of this kind, progress has not been delayed on that account and the big buildings are more than half up.

To say that Newcastle celebrated is to put it mildly indeed. Every one of the 5,000 inhabitants of this little "city of roses" was there and as many more from the surrounding country. Business was entirely suspended and so far as this particular portion of the United States was concerned it might just as well have been a national holiday. As a prelude to the formal ceremonies at the new plant there was one of the most ambitious automobile parades that Indiana has ever seen. Carl J. Fisher, the Indiana Maxwell agent, drove here at the head of a long procession of Maxwells, and his line was considerably swelled by the local owners, so that there was a string of more than a hundred cars. These served to carry the officers of the Maxwell-Briscoe Motor Company, Vice-President Fairbanks and the other guests of honor, who occupied six touring cars, while the remainder were given over to the members of the many fraternal organizations who helped to swell the crowd, which was estimated at over 10,000 people. The ceremonies were opened by an address of welcome by E. H. Bundy, one of the town's leading citizens, who was followed by Vice-President Fairbanks, the principal speaker of the day. It is evident that politics have not so engrossed the Vice-President's attention but that he is keenly alive to the immense future of the automobile industry, as well as its ultimate trend toward the production of moderate-priced cars on a vast scale. Naturally he drew a roseate picture of the great growth and promising future that lay before Newcastle owing to its en-

MR. MAXWELL MAKES AN ADDRESS TO THE MULTITUDE.

VICE-PRESIDENT FAIRBANKS, THE MAYOR, AND MR. BRISCOE.

VICE-PRESIDENT FAIRBANKS LAYING THE CORNERSTONE.

try as a factor in the automobile industry, and incidentally he reviewed the rapid strides made by the latter.

To put it in the vernacular, the committee on arrangements knew its business, for an address by C. S. Henley on "Greater Newcastle" and another by M. E. Forkner concluded the speech-making. Next to the actual laying of the cornerstone the great feature of the day was to be a banquet, but the attendance so far exceeded all estimates that it was necessary to make the big dinner a continuous performance. In fact, there were three of them, the first two installments being held at the Bundy Hotel two hours apart, and the other at the Country Club later in the evening.

The story of how Newcastle came to get the Maxwell-Briscoe plant is an interesting one. The terms agreed upon involved a site valued at approximately $30,000 and a bonus of $90,000, to be applied to the construction of the plant. In return for this the company agreed to establish a factory that would employ at least 1,200 men and keep it in operation until $2,000,000 in wages had been paid. But raising a bonus of $120,000 in a town of 5,000 people is no small task, and the manner in which it was successfully accomplished may well be patterned after by growing towns which find themselves in a similar position. A tract of land was purchased, plotted off into building lots, and on November 13, 1906, the town had a huge block of carefully marked out lots as its sole asset to induce the establishment there of what will probably be the largest automobile manufacturing plant in the country. That was the day the sale began, and in just four days there was such a demand for the lots that the contract was ratified by the directors of the Maxwell-Briscoe Motor Company and received its final validation in the shape of the signature of the Industrial Company just one week later. No time was lost in beginning construction, the first contracts being awarded on December 22. Work has progressed so rapidly since then that it is expected the main factory building will be complete in time to turn out some of the 1908 Maxwells.

As it is a typical example of the truly vast scale upon which American automobile plants are now being built, some statistics regarding its size will not be as dry as such figures usually are. The main building is of brick and concrete construction, involving the use of 1,000 tons of steel, and measures 722 by 316 feet. The manner in which things have been rushed on is evidenced by the fact that it is almost ready for the roof. In addition to this, the present plans include a 50 by 75 foot office building and an independent power plant housed in a special structure measuring 200 by 50 feet, and a 200 by 60 foot building for testing. These constitute the nucleus around which the plant will spread until it eventually covers the entire sixty-five acres of ground available, including a half-mile track for trying out cars. Several carloads of machinery have already arrived here to form part of the equipment and will shortly be installed, it being expected that operations will begin early in the fall. That the sponsors of the new plant expect to greatly exceed the provisions of their contract calling for the employment of 1,200 men is shown by the fact that the washroom equipment of the main building includes 2,026 individual lockers, and it is said that fully 1,500 employees will be put to work right from the start. It is understood that at first only the Model H Maxwells will be built here, but as soon as it is running full blast the new plant is expected to have an annual capacity of 5,000 complete cars, which is somewhat of an increase over the total output of 500 cars turned out in 1905 and 1906 by this company.

SCHEDULES SHOW LARGE NOMINAL ASSETS.

Schedules in bankruptcy of the firm of Smith & Mabley, incorporated, which recently went to the wall, have just been made public. They show total liabilities of $296,188, of which $90,000 are contingent, consisting of three damage suits for personal injuries; the nominal assets total $513,661 and the available assets $167,241. The last named consist of automobiles, supplies, accessories; outstanding accounts to the sum of $64,578; equity in accounts assigned, $2,614; cash, $557; unexpired insurance, $1,600; 360 shares of the stock of the Smith & Mabley Manufacturing Company of a par value of $36,000 and pledged for a loan of $25,000; plant and power account, good will, etc., carried on the books as representing $346,420, and the office furniture and fittings at 1765 Broadway inventoried at $61,892.

The liabilities consist of the claims of some 210 creditors, some of the chief of whom are Boessneck Broessel, $116,200, partly secured; New Amsterdam National Bank, $24,000; Riverside Bank, $165,500; W. H. Hull & Company, Bridgeport, Conn., $6,117; Bridgeport Vehicle Company, $5,999; Harry Monkhouse, Rome, N. Y., $3,638; Standard Oil Company, $2,698; Harburg Tire Company, now the Crescent Auto Parts Company, $1,714, and the New York Edison Company, $1,419. Of the actual liabilities but $25,562 are secured.

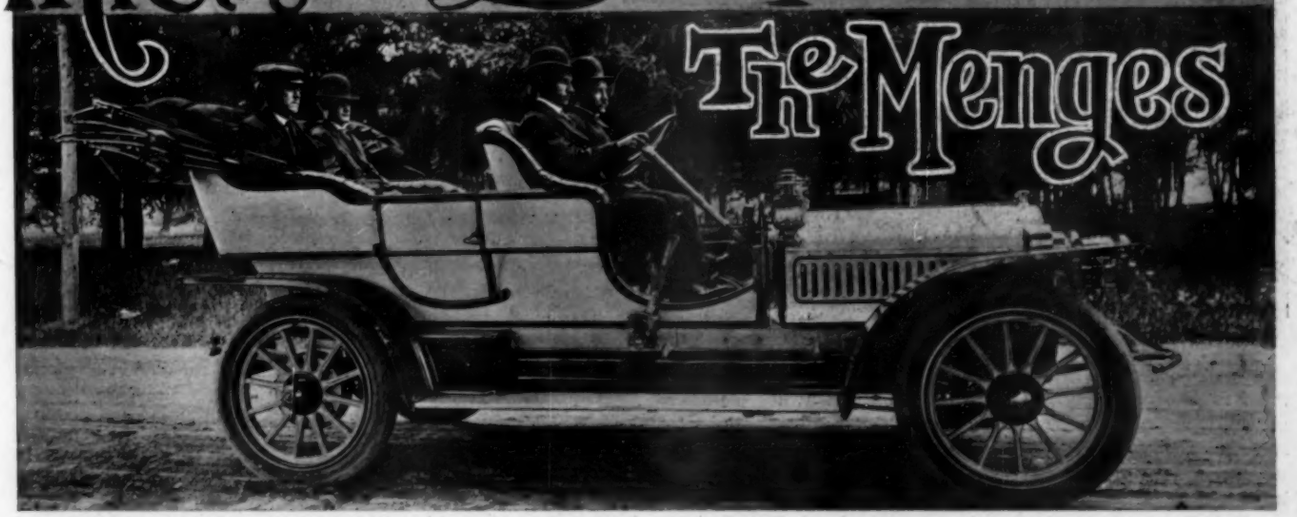
CARTERCAR RUNABOUT AS A FIRE FIGHTER.

Detroit has shown its appreciation of the advantages of the automobile in general as an aid to fire-fighting, and of the Cartercar in particular for this rôle, by purchasing a runabout of the latter make for the exclusive use of Master Mechanic Bresnahan of the city's fire department. This is the second car purchased by the municipal authorities for this purpose from the Motor Car Company of Detroit, the first Cartercar having been bought last year for the use of Superintendent Gascoigne, of the fire alarm system, for his official use.

MASTER MECHANIC BRESNAHAN'S NEW CATERCAR.

Michigan's Latest Production

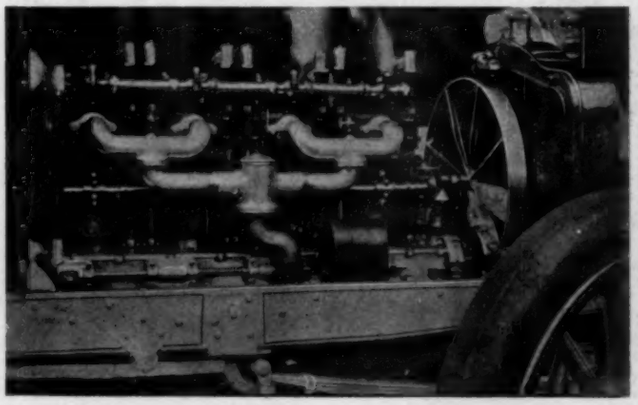
The Menges



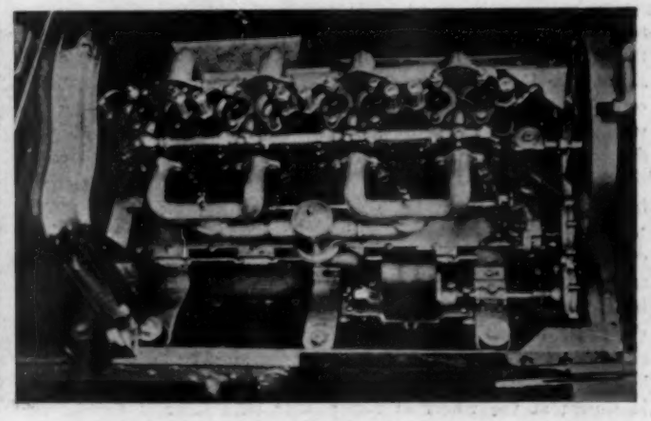
DESIGNER AND BUILDER, A. C. MENGES, IS AT THE WHEEL, WITH CHARLES CHILDS, GAS ENGINE SPECIALIST, BESIDE HIM.

GRAND RAPIDS, MICH., June 24.—Michigan's furniture city has again come to the fore with a novel automobile production which bids fair to make her distinguished in the industry if the car is built here for the market. A. C. Menges, who has long been identified with the technical side of automobile building, is the sponsor of the new production, and those who have been familiar with his work in the past along this line will not be surprised to note the numerous original features which mark his latest success. The power plant consists of a four-cylinder vertical water-cooled motor. With the exception of this and the fact that it is water-cooled, its adherence to standard practice does not extend any further. Cylinders are cast independently and are perfectly smooth outside, as both valves are located in the head, the valve system being the most distinctive feature of the motor. The valve cagings are ground and seated in a tapered housing so as to require no packing. Though located in the head, no rocker arms are used to operate the valves, the springs being set to one side, while the valve lifters, cams and camshaft are housed separately from the crankcase and run in a bath of oil. The exhaust cams are fixed to the camshaft and the operation of this part of the motor is substantially that recognized by standard practice. The intake cams, however, are movable on their supporting shaft at the will of the operator and are called bypass cams, constituting the most important feature of the motor control. By the use of this arrangement each cylinder may be throttled independently; it is, in brief, a system of variable inlet-valve control by means of which the quantity of the charge inspired is regulated, this in turn altering the compression in the cylinders and in consequence the amount of power developed. These especially constructed cams are supported on a sliding shaft, and as at present designed their control furnishes a means of giving the engine an initial compression ranging from one pound to eighty pounds to the square inch and a horsepower output of from five to ninety horsepower, the fuel consumption naturally being in accordance, the cylinder dimensions being 6 1-2 inch bore by a 5 7-8 inch stroke.

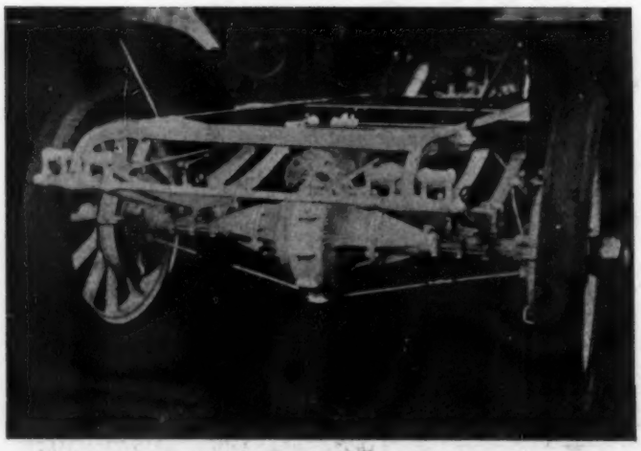
Any one who knows Menges would be safe in stating that a motor which was the work of his hand and brain would incorporate self-starting as one of its distinctive features, and this is the case here. But this is something quite different than has been attempted in the past. It consists of an electric motor which turns the engine over through the medium of a pinion and ratchet. Presumably, the motor is wound for a low voltage and is designed to take its current from the accumulators, though no details are as yet forthcoming on this point. Another rather distinctive feature is to be found in the ignition. Both low and high-tension systems are used, employing the same spark plugs interchangeably, while the current is furnished by a magneto which is driven by a short independent shaft at the right hand side of the motor. A Schebler carbureter constitutes this essential of the motor, though the latter is distinguished by the use of a somewhat original form of intake manifold, as will be seen



RIGHT SIDE OF MOTOR SHOWING MECHANISM.



TOP VIEW OF MOTOR SHOWING OPERATIVE PARTS.



REAR VIEW OF CHASSIS SHOWING DIFFERENTIAL.

from the accompanying illustration showing the power plant as viewed from this side. Another photograph, showing it in about half-plan view, gives some idea both of the motor and its constructional details as well as its odd form of suspension, the latter being patterned after the system of hanging locomotive engines. That is, it rests upon springs with six independent points of support. It is claimed for this that no amount of disalignment of the different wheels in passing over obstructions can cause the frame to spring or the transmission to bind. The continuous circulating system of lubrication that is coming to be more and more favored by designers has been adopted. The oil is pumped out of the base of the engine, one lead sufficing to carry it to all the important bearings, this naturally being supplemented by the splashing of the supply in the crankcase; the oil supply is filtered every time it passes through the pump, so that practically fresh oil is brought into contact with the wearing parts at all times. The fan, water pump and oil pump are all positively driven through bevel gearing.

The first step in the transmission of the power consists of an internal expanding clutch encased with and forming part of the flywheel. From this a long propeller shaft extends to the gear set, which is located on the rear axle and is housed in the same casing as the differential and drive. This is known as the Pleukharp transmission, the mounting and external appearance of which are well illustrated by the rear view of the chassis. This gear set is distinguished by the fact that all the pinions are not alone constantly in mesh, but that on all the speeds, including the reverse, the drive is direct—an arrangement for which high efficiency is claimed. There can be no clashing in making gear changes, and it is not necessary to disengage the clutch to drop from high into low speed, as this can be done at any speed without noise or jar.

The foundation of the chassis consists of channel section pressed steel frame of the standard type, but the suspension is distinguished by the use of four semi-elliptic springs, the location and mounting of which are made plain in the illustration showing the rear axle unit already referred to. These are hung on each side of the frame and the use of four permits of the employment of a much lighter spring, thus giving greater resiliency. Forward the suspension is of the standard type, using semi-elliptic flat springs. This is also true of the brake system which consists of a set of internal expanding and external contracting brakes centered on drums on the rear hubs. The wheelbase is 123 inches and the gage standard 36 by 4 1-2 inch wheels being employed, while detachable tires of this size are used on front and rear. The front axle is a one-piece nickel-steel I-beam forging. The steering gear is of the worm-and-sector type. As shown by the photograph at the head of the page, an attractive type of straight line body, with ample sized mud guards has been fitted. A. C. Menges, the designer and builder of the car, is shown at the wheel in this picture with Charles Childs, an expert gas engine man, sitting at his left. Control is by means of the usual spark and gas levers mounted on a stationary quadrant over the steering wheel.

The four-cylinder car above described is designed to sell at $6,000, and several of them are now in course of construction. It is the intention of Mr. Menges to head a company which he will shortly organize to manufacture the machines, his plans also contemplating the construction of a six-cylinder car to sell at $2,000. Inducements are piling in upon him to establish the proposed factory in various cities of this State, but no action has been taken on this as yet.

QUAKER CITY'S AUTO TRANSIT CO. WINNING.

PHILADELPHIA, June 24.—After repeated rebuffs the Philadelphia Auto Transit Company seems to be in a fair way of attaining its long-sought ends. On Thursday last there was introduced in Councils an ordinance framed to meet the objections of Mayor Reyburn who had vetoed the last measure passed by Councils on the ground that it was "too general." In view of the numerous lemons which have been handed the Auto Transit people in the past, there is a disposition manifest among the municipal solons to give the new bill the right of way, and it promises to go through a-humming under suspension of the rules.

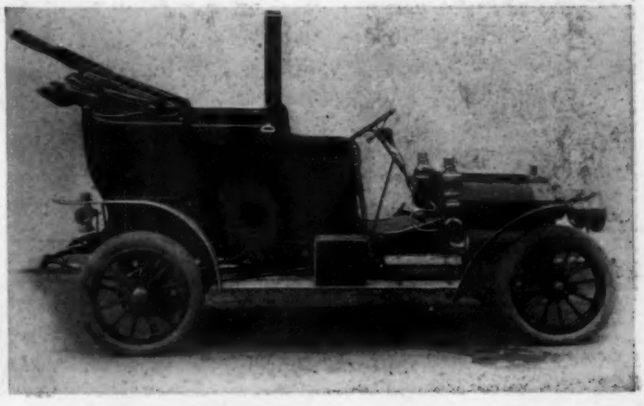
At any rate, the company is making preparations to inaugurate its first service—the Broad and Diamond streets line—on July 15, the day of the opening of the monster Elks convention here. Meanwhile work is being rushed on the new power house and garage at Thirty-first and Dauphin streets. Four steam turbines of 150 horsepower each will furnish power for the dynamos. Twenty double-deckers are completed, ready for the opening of the line, and thirty more are under way.

COLUMBIA INAUGURATES SUMMER SCHOOL.

Though it has been customary to hold a summer session at Columbia in a number of branches, courses in civil and mechanical engineering will be taken up for the first time this year, the subjects including Gas Engines, Hydraulics, Structures, Concrete Steel and Experimental Engineering, the principal object being to meet a demand from instructors in engineering schools and technical graduates who desire to keep pace with the progress of recent years in these branches.

STODDARD-DAYTON PRODUCES TAXIMETER CAB.

American gasoline taximeter cabs, so plentiful on paper, so rare in material form, have received another member to their thin ranks in the shape of a unit from the Stoddard-Dayton factory at Dayton, O. The Stoddard-Dayton, a photograph of which is given, is ready for shipment and will almost immediately be seen in active service. In general design it follows the lines of the most successful European taximeter cabs, with the power plant forward, shaft drive and an elegant landaulet body which can be opened or closed at will.



STODDARD-DAYTON TAXIMETER CAB READY FOR USE.

VOLUME III., OFFICIAL BLUE BOOK.

The map on this page is a fac-simile reproduction of the double-page map of Pennsylvania from Volume III. of the Official Automobile Blue Book, published this week by the Class Journal Company, publishers of THE AUTOMOBILE. With Volume I covering New York State and Canada, with extension routes into the Middle West, and Volume II covering New England, with extension routes into the Provinces, it completes the 1907 series of the national touring guide. The entire work includes over 800 routes, describing in the aggregate over 50,000 miles of American roads, with route maps the greater part of the way and local diagrams showing the entrances and exits for nearly all the cities and the most important towns.

Special interest attaches to the Pennsylvania map from the fact that for the first time the State has been taken up as a whole and charted out comprehensively for the guidance of the automobile tourist. Pennsylvania has not been in the past, and is not now, a good touring State throughout; but it has some of the best runs in the United States, particularly in the Eastern part. Moreover, its roads, like its railways, are important links between the East and the West. This is exemplified in the 1907 Glidden Tour, which is coming East from Columbus, Ohio, by way of Pittsburg, Greenburg, Bedford and Chambersburg; thence southward to Baltimore, returning into Pennsylvania again for the final run to Philadelphia and New York.

The average of Pennsylvania roads leaves something to be desired; also Pennsylvania laws; and the toll-gate survives in some parts of the Keystone State in an acute form. But here as elsewhere things are changing for the better, and this will be more and more the case as touring increases in popularity. This result will be materially advanced by the large amount of up-to-date material in Volume III of the Blue Book.

REPAIRING SHERIDAN DRIVEWAY NORTH OF CHICAGO.

SHERIDAN DRIVEWAY SEVERELY INJURED.

CHICAGO, June 17.—Chicago and lake shore automobilists have had a narrow escape from losing a long stretch of their favorite driveway, the famous Sheridan drive that is planned to eventually reach from Chicago to Milwaukee. Lake Michigan during the last three months has had such a continuous stirring by high winds as to break any past record for bad weather. The waters were driven over the sheathing that had been planted out in the lake, and attacked the embankments of the roadway. South of Evanston the road lays between the eastern fence of Calvary cemetery and the lake shore. It is but a narrow strip at best, and it was this piece of roadway that the fiercely driven spray fairly lapped away until there was little more than a passage way.

AUTOMOBILE MAP OF PENNSYLVANIA, WITH PRINCIPAL CONNECTIONS INTO THE ADJOINING STATES.

AMUSING CHAPTER OF SELDEN LITIGATION.

Last week was productive of a somewhat diverting side-show in what has popularly come to be known as the Selden litigation—that is, the action of the Electric Vehicle Company vs. the Ford Motor Company over the Selden patent. There was a try-out of the "old gas buggy," which is said to represent Mr. Selden's first efforts, as well as of the duplicate car built on the same lines as an exhibit in the case. These trials took place Saturday, June 15, and Monday, June 17, at the old Guttenberg race track and were supposedly very much sub rosa—so much so that they were commented on by at least one of the motor papers last week and a fully illustrated account appeared in one of New York's dailies on Sunday, June 23.

Then the press bureaus of the two organizations took to the typewriter and the duplicating machine. Quite contrary to precedent, the defense came out with a full statement several days in advance, characterizing the whole affair as a lame attempt to make capital out of the trial; further, that Mr. Selden had requested that no publicity be given the affair, and that the trial was not ordered by the court, as claimed, and that the "1877" label on the old car is the most ancient thing about it, barring the original cylinder casting, as the remainder has all been rebuilt, with considerable more of similar import, not omitting the fact that the first day's trials were a fiasco and the second were not much better. R. A. Parker, of counsel for the defense, is quoted at length on the matter, giving his reason for his statement as the bad faith of his opponents in rushing into print when there had been a mutual understanding that no publicity was to be given the affair.

Apart from the Sunday newspaper story nothing was heard from the publicity bureau of the Licensed Association until Wednesday morning, when a full set of photographs and the complainant's side of the case were sent out—entirely too late for publication in this week's issue of THE AUTOMOBILE. According to the matter accompanying the pictures, both the old car and its new duplicate made a most excellent showing of their powers of running and hill-climbing, the latter consisting of the grade to the paddock of the old track.

GRAND PRIX AND GERMAN RULES FOR BRESCIA.

PARIS, June 19.—Disappointed last year by the adverse action of the government, the Automobile Club of Milan now announces its 1907 Brescia meeting, in Northern Italy, with a great flourish. There are two distinct races, one for racing machines of any power compatible with a fuel allowance of 6.6 gallons per 62.6 miles. In all essential features it is a second edition of the French Grand Prix, and will doubtless be competed by most of the starters in the French event. The Velocity Cup, a $5,000 trophy, will go to the victorious driver, and the engineer of the car will be awarded the cup of the Automobile Club of Milan.

The second race is for so-called touring cars with a maximum cylinder volume of eight liters. Gasoline of the specific gravity of 680 to 720 must be used, wheelbase must not be less than 118 inches and weight not lower than 2,585 pounds. There are a few other conditions regulating the nature of dashboard, height of seats and road clearance, etc., every feature of the German Emperor's race being embodied in the regulations.

IMPORTERS WOULD EMULATE PARIS SALON.

Official confirmation of December 28 to January 4 as the date of the Importers' Salon in Madison Square Garden has been made by the show committee. A uniform system of decoration, announced as something distinctly foreign and artistic, will be adopted, and the event will be known as "The Parisian Salon Transported." André Massenat has been appointed chairman of the show committee; E. R. Hollander is treasurer; C. R. Mabley secretary and manager, and E. Lillie will be responsible for Italian and English exhibits.

KULICK MAKES NEW RECORDS IN FORD SIX.

DETROIT, MICH., June 24.—In the twenty-four-hour race at the State Fair Grounds, which ended at 10 o'clock Saturday night, Frank Kulick, at the wheel of a 40-horsepower six-cylinder Ford, carried off all the honors. In addition to beating the world's record for that time by the very substantial margin of 309 miles, his total for the twenty-four hours footing up 1,135 miles, he also smashed many track records for intermediate distances. At the end of nine hours he had covered 429 miles at an average speed of 47.2 miles an hour, as against the best former track record of 33 miles an hour. In ten hours he went 480 miles, or an average of 48 miles an hour flat, while at the twelve-hour mark he raised this to 592 miles, or an average of 49.33 miles an hour. His record at fourteen hours was 684 miles and at fifteen hours 731 miles, his running being most consistent.

At the latter point Herbert H. Lytle, in the Pope-Toledo Vanderbilt Cup racer, was second with 724 miles to his credit, followed by Charles Coey, in a 60-horsepower Thomas, with 649 miles. At the finish Lytle had made 1,109 miles and Coey 997 miles. The only mishap of the day which might have been a serious one was caused by a tire bursting on Lytle's car, sending it through the fence a complete wreck. He escaped injury and got his reserve car into action within a few minutes. The other scores ranged from 798 miles down to 713. The car driven by Eddie Bald and "Kid McCoy" dropped out.

INDEPENDENCE DAY RACES AT LOWELL.

LOWELL, MASS., June 25.—Straightaway road races will be held on the Lowell-Kingsbury Boulevard on the afternoon of July 4. Events provided for are a five-mile contest for 35-horsepower cars and up; a five-mile race for 60-horsepower machines; a mile standing start and a mile flying start free for all. A silver cup is offered by the Heinze Electric Company, of Lowell, for each of the five-mile races. The course is six miles long.

BERKSHIRE ASSOCIATION PLANS FIRST MEET.

READING, PA., June 25.—Ten events for all types of gasoline and steam automobiles constitutes the program arranged by the Berkshire Automobile Racing Association on the Shillington track on July 4. Distances are two, three and five miles, and the machines provided for cover all classes from motorcycles costing $225 to touring cars costing up to $5,000.

MANAGER J. L. SNOW AND HIS PEERLESS ON BLUE HILL.

Blue Hill Observatory is located on the top of Blue Hill, near Boston, a few miles to the south of the city, and is the highest point of land on the Atlantic Coast from Maine to Florida. The property is controlled by the park commissioners, and autos are barred. A footpath leads to the top; also a winding road, which is very steep and rough.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

It has remained for the Thomas Flyer testers at the Buffalo plant to attach a most appropriate cognomen to the motorcycle "cops," who blossom each spring and whose duty is to exert a restraining hand on those who are tempted to "let her out." Henceforth Buffalonians will know them as "corn-poppers."

In a way the winners in the recent Herkomer tour, which is generally credited with being the most strenuous event of its kind held on the Continent, won a victory for an American manufacturer, the first and second cars to finish in the tour as well as the third to come in after the hot contest for the Emperor's Cup using Vacuum Mobiloils for lubrication.

As a result of the greatly increased demand for Witherbee storage batteries, particularly from Canadian points and the Middle West of the United States, the makers have found it necessary to increase the facilities of their branch factory at Detroit, Mich., which supplies this territory. C. E. Brelsford has recently been placed in charge of this plant and is making things hum.

Miller Brothers, of Amesbury, Mass., who are pioneers in the automobile body building business, have recently found it necessary to double their facilities in order to take care of the demand. Their plant now occupies a five-story building measuring 65 by 220 feet and employing 125 men. They are now devoting their entire attention to automobile work and turn out bodies complete, either finished or in the white.

Three Dragon cars have been entered in the Chicago Motor Club's reliability run to be held on June 28 by the Branstetter Motor Company. The route of the run is via Libertyville, Half Day, Wauconda and McHenry to Waukegan, and is so arranged that the touring cars and high-powered runabouts will have to travel 170 miles and the small cars and runabouts about 146 miles. A large entry list has already been made up.

When last heard from the 24-horsepower Premier touring car that is making a non-stop road run under the auspices of the Bridgeport Automobile Club had covered 4,017 miles and was still going strongly. This means that the engine has been running continuously for 384 hours without a single adjustment having been made. The run started on June 3 and as many as ten passengers have been carried at one time to demonstrate the car's power.

Still another manufacturer has become convinced of the fact that shock absorbers are a necessary part of a car's regular equipment. This is the Dayton Motor Car Company, Dayton, O., who build the well-known Stoddard-Dayton cars and who have just placed an order for sixty sets of the Truffault-Harttord shock absorbers for some of their 1908 output. This makes eighteen manufacturers in all who now equip their cars in this manner.

It takes a western sporting man to really originate language of the truly descriptive kind as witness this from this "Tex." Rickard of Goldfield, Nev., on his reasons for buying a 40-horsepower Acme touring car. "I decided to pay my good cash for this machine," he says, "because it is not built with a tin engine and a papier mache transmission nor wooden springs, and a cheap car would stand no show out here at all, so I plunged on quality."

As part of its sales campaign, G. E. Risley and D. C. Lull, of the Electric Vehicle Company's sales department, are making a tour of the State of Maine, Mr. Risley driving a 24-horsepower, and Mr. Lull a 45-horsepower Columbia. Both cars were driven to Boston and from there shipped to Bangor. Mr. Risley has a large following in Maine and Mr. Lull is well known for his performances behind the wheel, having participated in the New York-Chicago record-breaking run.

Kenneth A. Skinner, one of the veteran automobile dealers at the Hub, suffered a severe loss early last week through the destruction of his fine garage building in the Back Bay district of Boston by fire. The watchman who discovered the fire succeeded in saving a few small cars, but three imported limousines, a number of touring cars and runabouts, as well as a number of cars on storage, were destroyed, the loss being estimated at $50,000. Mr. Skinner's portion of this aggregates about $25,000, only partially covered by insurance.

That there is no sign of a falling off in the demand for the Franklin air-cooled cars is quite evident from the fact that their makers—the H. H. Franklin Manufacturing Company, Syracuse, N. Y.—have just found it necessary to add another reinforced concrete building to their already extensive plant. This measures 60 by 100 feet, is five stories high and will increase the capacity of the plant by 300 more cars a season. The contract calls for its completion at the end of ninety days and, when running, the company's pay roll will be swelled to 2,000.

For the first time in a long while an electric has come to the front in competition with gasoline cars. This was a Baker roadster driven by E. Gruenfeldt, chief engineer of the Baker Motor Vehicle Company, who showed what an electric can do in the way of hill climbing at the Cleveland Automobile Club's meet at Stucky Hill. The latter was a stiff test, but the Baker made it in 1:41 2-5, beating the time of eighteen gasoline cars and coming within a few seconds of the best performance of the stripped cars. The run was made from a standing start.

Denmark is coming to the fore as an automobile country, and it is significant that an American car—a two-cylinder Reo—should have been one of the few to finish with a perfect score in the most strenuous contest ever held there. This was a reliability run held over a 300 kilometer hilly course in the vicinity of Copenhagen by the automobile club of that city on May 26. That this is not an isolated instance is evidenced by the fact that a Reo won a silver cup in its class in the Bridgeport hill climb and was one of the first five to finish in the strenuous Albany run of the New York Motor Club.

Under the direction of F. A. Drake, New York manager of the Fisk Rubber Company, a Locomobile touring car has been equipped with the new Fisk removable rims and heavy car type tires and will be driven from Albany, N. Y., to Cleveland, O., by way of Troy, Schenectady, Binghamton, Elmira, Syracuse, Utica, Rochester and Buffalo. At the latter place it will be turned over to Mr. Zimmerman, Chicago representative of the Fisk company, who will drive it to Cleveland, where the car is to enter the Glidden tour. Stops will be made at the cities mentioned to demonstrate the merits of the new tire.

Ten thousand miles in a 50-horsepower Apperson touring car with a broken spring as the only work necessary on the car is the record made by Calvin Smith, of Chicago, in a tour abroad from which he has just returned. But for this mishap, which was caused by the car dropping off a small wooden bridge while running through part of the Alps at night, Mr. Smith would have had a perfectly clean score to report. He included Spain in his itinerary—that land of poor roads and worse accommodations that is religiously avoided by the tourist. His car is to be used on an attempt at the New York-Chicago record this week.

Record-breaking shipments of gasoline cars have become a matter of more or less common occurrence, but it has remained for the Columbus Buggy Company, of Columbus, O., to set up a standard in this field where electrics are concerned. These makers recently made a ten-car shipment consisting of forty electric automobiles to their western New York State agent, A. V. Hart, at Rochester, N. Y., which is believed to overtop anything of its kind. The makers of electrics are usually as quiet about their doings as are their cars in running, but this is one that gives some idea of the extent of the demand for these easy-going town cars.

With the recent addition of a large steam hammer and other increases to the facilities of their already extensive plant, the Anderson Forge & Machine Company, of Detroit, Mich., are in a position to do a considerable amount of general forging beside their specialty of making engine crankshafts for which their machine shop equipment is particularly designed. This brings the plant's facilities up to twenty-one hammers of various sizes, so that it is equipped to manufacture an extensive range of drop forged parts for automobile work. A new building, measuring 40 by 150 feet, and two stories in height, has also been erected for a die room, the additions representing an outlay of $150,000.

A few years ago Death Valley was considered impassable even to the automobile, but now it is included in record runs as witness the performance of a 35-horsepower Peerless touring car which was driven the entire distance from Rhyolite, Nev., to Los Angeles, Cal., a stretch of 400 miles in a little over two days. With Dick Allen at the wheel and Fred H. Vahrenkamp and a party in the tonneau, the start was made from the former place on Tuesday at 11 A. M. and Los Angeles was reached the following Thursday at 1:30 P. M. Allen is known as the youngest driver in Nevada, but brought the car through without a mishap, and though the sand was often up to the hubs in parts of Death Valley on Wednesday the car made 200 miles.

NEW AGENCIES ESTABLISHED.

Pirelli & Company, large manufacturers of cable and rubber goods, at Milan, Italy, will open an American branch for their tire department at 296 Broadway, New York.

A new branch house has been established at Broad street and Fairmont avenue, Phil-

adelphia, by the Goodyear Tire and Rubber Company. A thoroughly fitted up repair plant, including a steam vulcanizer, is among its appointments. L. S. Hall will manage the branch.

The Bellefield Motor Company, of Pittsburg, Pa., has taken the agency in that territory for the De Luxe cars. The company has a seven-story garage building adjacent to the Schenley Hotel and Duquesne Gardens. A new company has been formed in Chicago to handle the De Luxe, to be known as the De Luxe Motor Sales Company, with a capital stock of $50,000. The De Luxe has been handled this season in Chicago by the McDuffee Automobile Company.

Two more of Pennsylvania's prominent automobile factories—the Dragon and the Pennsylvania—established local branches in Philadelphia last week. The Pennsylvania secured representation within the charmed circle when the West-Stillman Motor Car Company opened quarters last Saturday at 153 North Broad street. Besides the Pennsylvania, the new firm will handle the Mercedes, Mr. Stillman having been the former local representative of the Mercedes Import Company. E. P. West, the other member of the firm, is a newcomer in the trade. The Dragon salesrooms have been established at 143 South Broad street, across the street from the Bellevue-Stratford. A. B. Cumner has been appointed manager.

PERSONAL TRADE MENTION.

Otto C. Owen, brother of R. M. Owen, has been appointed manager of the Chicago branch of R. M. Owen & Company, to succeed L. J. Ollier, who has gone to California to engage in business at Los Angeles. Mr. Owen has been identified with the Reo and Premier Chicago branch for some time as assistant manager.

J. B. Kavanaugh, for some time manager of the Cleveland branch of the Hartford Rubber Works Company, has resigned. He was for a number of years on the road for the Hartford people and did very effective work. P. H. Goodall, for several years representative for Hartford tires on the road in Ohio territory, has been appointed branch manager at Cleveland to succeed Mr. Kavanaugh.

Several additions have recently been made to the H. H. Franklin Mfg. Co.'s force, notably George Ostendorph, formerly branch manager for the Hartford Rubber Works Company at Buffalo; H. B. Henly, of the New York Motor Company, and George E. Messer, of the H-O Company at Buffalo. These men are now at the Franklin factory at Syracuse taking a thorough course of instruction in their new duties.

Walter Keenan, formerly manager of the Standard Oil Company's interests at Dayton, O., has taken the general management of Speedwell Motor Car Company, of that city This concern is one of Dayton's new enterprises, and the organization is a very strong one, headed by P. A. Schenck, president of the Dayton Malleable Iron Company, and M. Sternberger, of Jackson, O., president of the Superior Coal Company.

NEW TRADE PUBLICATIONS.

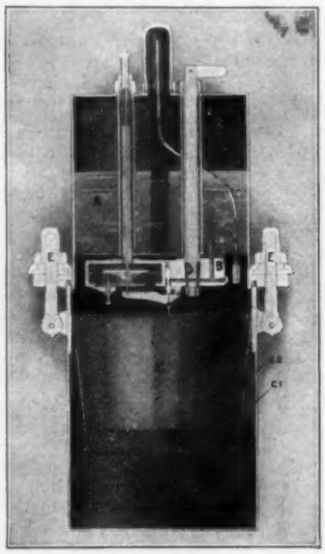
The Pratt & Whitney Company, of Hartford, Conn., has sent out a complete catalogue of over 200 pages descriptive of tools in general use. At the end of the book is a series of tables of English measurements and their metric values.

Enclosed within a dainty cover, the 16-page catalogue of the Traveler automobile, manufactured by the Bellefontaine Automobile Company, Bellefontaine, Ohio, deals with the two models manufactured by this company. They are Model A, an air-cooled machine, and Model B, a water-cooled. Details of construction and illustrations of parts are given in the booklet.

It is a useful little book of about eighty pages that has been sent forth by the Diamond Rubber Company, Akron, Ohio, containing useful information to all tire dealers. Descriptions of various types of pneumatics, solids, and single tube tires of all dimensions are given, together with complete price list. The Marsh rim is given considerable attention, and instructions are presented for dismounting and mounting it.

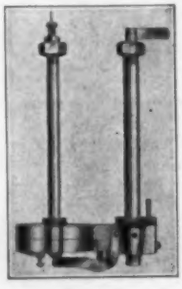
INFORMATION FOR AUTO USERS.

New Automatic Gas Generator.—Some important and much-needed improvements in acetylene gas generators are claimed by the makers of the Peterson New Automatic Generator, the O. W.



SECTIONAL VIEW PETERSON GENERATOR.

Petersen Manufacturing Company, 1253 Michigan avenue, Chicago, Ill. Chief among these is a positively automatic water control which automatically adjusts the rate of gas production to suit the number of lights burning so that no hand adjustments whatever are necessary. The Peterson device consists of a needle valve and diaphragm so operated by the gas pressure that the water flow is automatically controlled, being diminished, increased or stopped altogether, in accordance with the demand made on the generator for gas. This device, together with the water passage, is contained in a removable fitting, so that it is accessible for quick cleaning or repairs.

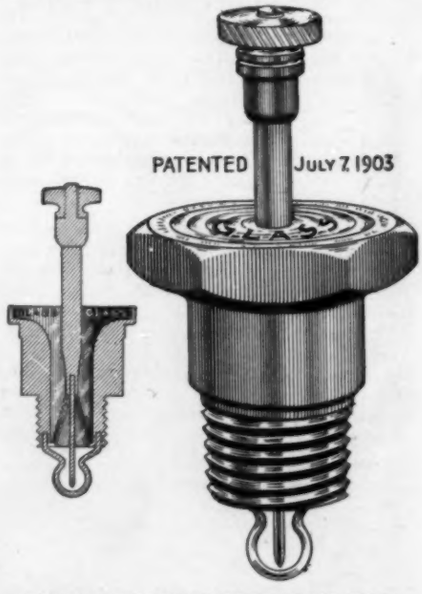


WATER CONTROL.

The automatic tossing carbide basket insures a constant rotation of the fresh carbide to the top next to water, while the spent carbide is passed down next to the grate, where the ash is eliminated. The basket is hung on its upper edge at one side by a helical spring, from which it obtains its movement. The performance of this generator in practice substantiates the claims of its makers, so that the device is proving popular with the trade.

Weiss Siren Horn.—L. T. Weiss is the inventor of a new and improved type of siren horn which is now being marketed by the Motor Accessories Company, 14 Dutch street, New York. The improvement consists chiefly of the use of a revolving sound-producing member of but a fraction of the weight ordinarily employed for this purpose, thus entirely eliminating not alone the objectionable vibration usually set up, but also obviating all risk of breaking off at the shaft. Its extremely light weight gives it a minimum of inertia, so that the horn sounds the moment the friction pulley comes in contact with the flywheel. A universal joint is fitted to the pulley-holding connection, making it a simple matter to attach, while a neat appliance carries the flexible tube centrally, eliminating all objectionable wiring.

A Glass Window Spark Plug.—To be able to look through a window into the cylinder and observe the conditions under which the engine is working is an advantage obvious to all automobilists. A spark plug which allows of this has been produced under the name of the Anderson and is being handled by W. E. Hutton, of 350 Fulton street, Brooklyn. Instead of porcelain, the insulation is of glass welded to the steel case and of the same expansi-



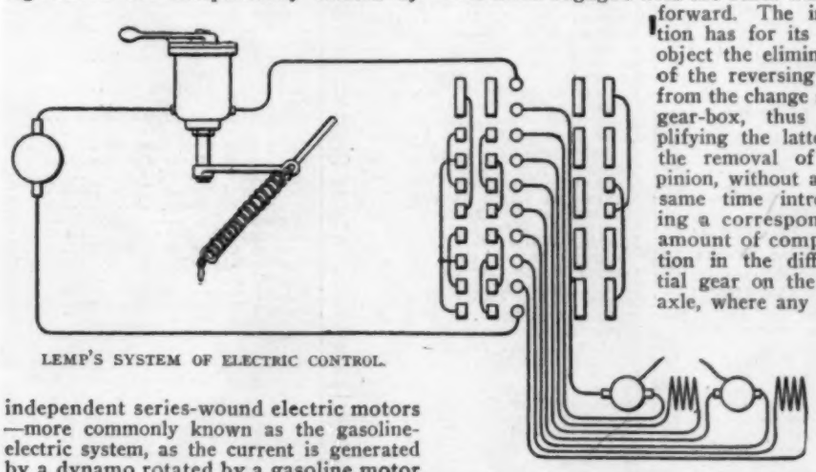
SECTIONAL AND PROSPECTIVE GLASS PLUG.

bility as the steel. The method of filling the case with molted glass is the subject of a patent, the process employed being of such a nature that the glass and steel expand together, removing all risk of cracking. A couple of plugs observed under working conditions recently showed with what facility a missing cylinder was detected, and how readily carbureter and ignition adjustments could be made. Another feature of the plug is that there are three sparking points instead of one.

SOME GRIST FROM UNCLE SAM'S PATENT MILL.

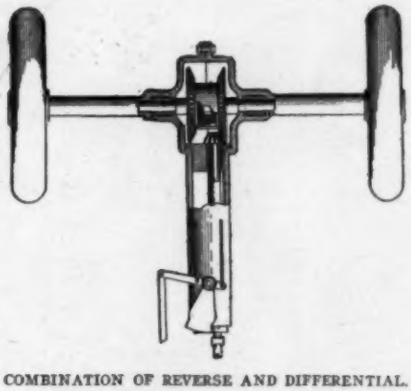
Control for Gasoline-Electric System.

This invention comprises a control for automobiles of the type in which the driving wheels are independently rotated by



LEMP'S SYSTEM OF ELECTRIC CONTROL.

independent series-wound electric motors —more commonly known as the gasoline-electric system, as the current is generated by a dynamo rotated by a gasoline motor of the usual type. The object is to provide novel connections for electrically braking the vehicle to prevent skidding by manipulating the electrical relation of the motors to one another, as well as the relation of their parts. It consists of the combination of a vehicle having independently rotatable driving wheels on its opposite sides with series-wound electric motors mechanically connected thereto. A resistance and controlling switch is adapted to short-circuit the motors through the resistance with their fields in series and their armatures in parallel. The tendency to skid is thus automatically compensated for, as the motors, and consequently the driving wheels, are kept running at the same speed.



COMBINATION OF REVERSE AND DIFFERENTIAL.

The inventor is Herman Lemp, Lynn, Mass., the patent being assigned to the General Electric Company, Schenectady, New York.

Combined Reverse and Differential Gear.

A novel form of combination reverse and differential gear is covered by this invention, which permits of only using such pinions as are necessary to provide the required forward speeds in the change speed gear box. The differential is of the usual spur type and instead of having one large bevel pinion, is provided with two of the same size, facing each other. The propeller shafting carrying the small driving bevel is adapted to be shifted laterally so as to permit of its engagement with either of the large bevels shown, the result being that while in mesh with the left-hand one, as shown, the vehicle will run backward, and when engaged with the other will run forward. The invention has for its chief object the elimination of the reversing gear from the change speed gear-box, thus simplifying the latter by the removal of this pinion, without at the same time introducing a corresponding amount of complication in the differential gear on the rear axle, where any additional weight or mechanism would be even less desirable than in the gear-set. Simple provision for effecting the change is made by equipping the forward end of the propeller shaft with the usual universal joint and an operating lever, as shown mounted on the case enclosing the moving shaft.

The inventor and patentee is William A. Slater, Cedar Point, Kan.

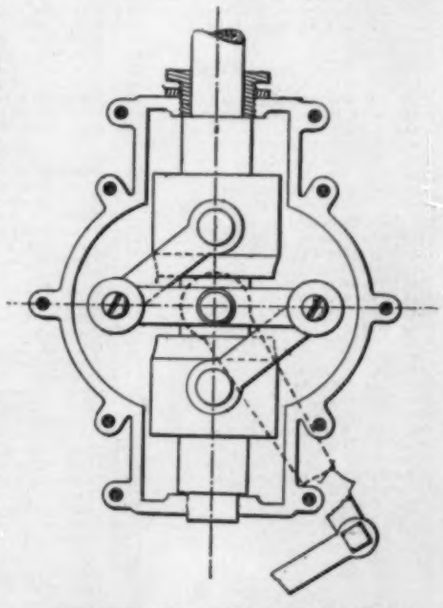
Improved Steering Gear Connection.

In the present instance, the object of the invention is to simplify the mechanism which operates the crank arm which controls the movement of the connecting rods to the steering wheels. The arrangement of the parts is such that the steering wheels may be turned from one extreme to the other with a minimum of movement of the steering post, and positively locked in their adjusted position without unduly straining the parts of the steering mechanism, or causing excessive vibration of the steering post while the steering wheels are passing over obstructions. In outline, the invention consists of the use of two moving members concentric with and adapted to be moved upon the steering pillar by the revolution of the latter, and two arms, fastened at one end to opposite points on the interior of the housing and at their other ends, to the two moving members just mentioned, as shown.

The inventor is Arthur E. Rockwell, of Oswego, N. Y.

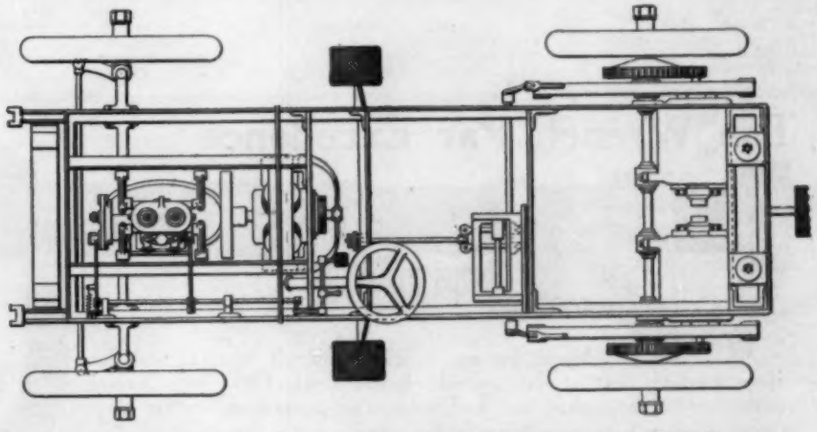
A New Electric Transmission.

This invention consists of the combination of an automobile running gear or chassis, complete, whereon is mounted a prime mover such as the gasoline motor of the type usually employed for this purpose, driving an electric generator, supplying current to electric motors attached directly to the rear wheels, there being no mechanical connection between the prime mover and the road wheels. The invention consists mainly in so arranging the controlling lever for the engine of the vehicle, that while in normal operation it will remain in the position in which it is placed, while if the electrical circuit is broken, it will return automatically to the lowest speed position, means being provided in the electric circuit for holding it in such position.



REDUCING MOVEMENT STEERING GEAR.

The inventor is Herman Lemp, of Lynn, Mass., the patent being assigned to the General Electric Company, of Schenectady, N. Y.



GENERAL ELECTRIC CO.'S SYSTEM OF GASOLINE-ELECTRIC TRANSMISSION.

Specially reported for THE AUTOMOBILE by Beeler & Robb, Patent Lawyers, Washington, D. C.

INDEX TO ADVERTISERS

Acetylene Gas Illuminating Co. 49
Acme Motor Car Co. 52
Adams Co. 52
Add-Wear Tire Sleeve Co. 48
Aerocar Co .102
Ajax-Grieb Rubber Co. 54
Allyne Brass Foundry Co. 72
American Vanadium Co. 94
Anderson Forge & Machine Co. 51
Arc Toledo Spark Plug Co. 49
Ashtabula Carriage Bow Co. 54
Aster Co., L. 48
Atlas Mfg. Co. 48
Atwater Kent Mfg. Works. 48
Atwood Mfg. Co. Cover
Auburn Automobile Co. 52
Auto and Power Appliance Co. 48
Auto Goods Co. 50
Auto Improvement Co. Cover
Auto Pump Co. 49
Autocar Co. 53
Automobile Supply Co. 51
Avery Portable Lighting Co. 100

Badger Brass Mfg. Co. 71
Baldwin Chain Mfg. Co. 51
Barnes Mfg. Co. 104
Bartholomew Co. 102
Barton Mfg. Co. 54
Bay State Auto Co. 52
Bay State Goggle Co. 48
Bay State Stamping Co. 48
Beaver Mfg. Co. 70
Beeler & Robb 70
Bemus, T. Alton 84
Benford, E. M. 60
Berkshire Motor Car Co. 52
Bethlehem Steel Co. 74
Billings & Spencer Cover
Blasier Mfg. Co., M. E. 54
Blomstrom Mfg. Co. 102
Blomstrom Motor Co., C. H. 52
Bloomer, R. E. 70
Blue Book 57
Boker & Co., H. 51
Borbein Auto Co. 55
Bosch, Robert 98
Boston Auto Gage Co. 60
Boston Gear Works 65
Bowser & Co., S. F. 51
Boyle & Co., John 108
Brennan Motor Co. 67
Bridgeport Vehicle Co. 54
Briscoe Mfg. Co. 51
Brown, H. W. 58
Brownell-Trebert Co. 60
Buckeye Jack Mfg. Co. 70
Buckeye Mfg. Co. 99
Bullard, J. H. 53
Buob & Scheu 54
Byrne-Kingston Co. 85

Cadillac Motor Car Co. 107
Central Body Co. 54
Champion Co., A. 66
Charter Mfg. Co. 55
Chelsea Clock Co. Cover
Clark, E. S. 50
Cleanola Co. 64
Coes Wrench Co. 44
Colgan Co., J. W. 54
Colt Runabout Co. 103
Conn. Tel. & Elec. Co. 65
Conover Motor Car Co. 97
Continental Auto. Mfg. Co. 111
Continental Caoutchouc Co. 92
Continental Motor Mfg. Co. 55
Corbin Motor Vehicle Corp. 113
Corcoran Lamp Co. 50
Cornish-Friedurg Motor Car. 72
Covert Mfg. Co. 50
Cowles & Co., C. 55
Craig-Toledo Co. 52
Crawford Automobile Co. 52
Crescent Parts Co. 87
Cullman Wheel Co. 49

Daimler Mfg. Co. 52
Darracq Motor Car Co. 52
Dayton Electrical Mfg. Co. 75
Detroit Auto Vehicle Co. 52
Det. & Buffalo Steamboat Co. 61
Diamond Chain & Mfg. Co. 51
Diamond Rubber Co. 90
Dietz Co., R. E. 58
Dixon Crucible Co., Joseph. 50
Dolson Automobile Co. 53
Dorris Motor Car Co. 105
Dover Co., Geo. W. 47
Dow Coil Co. 71
Dragon Automobile Co. 81
Duplex Coil Co. 73

Eastern Carbon Works. 71
Echo Mfg. Co. 66
Edmunds & Jones Mfg. Co. 49
Eldredge Electric Mfg. Co. 62
Electric Vehicle Co. 103
Elmore Mfg. Co. 113
Empire Automobile Tire Co. 58
Empire Wheel Works. 54
Excelsior Supply Co. 48

Fairmont Engineering Works. 52
Federal Automobile Co. 105
Fisk Rubber Co. 96
Ford Motor Co. 52
Forest City Motor Car Co. 104
Franco-American Auto and Supply Co. 48
Franklin Mfg. Co., H. H. 52

G & J Tire Co. 88
Gearless Transmission Co. 109
Gibney & Bros., Jas. L. 49
Giesler Bros. 71
Gilbert Mfg. Co. 93
Goodrich Co., B. F. 90
Goodyear Tire & Rubber Co. 50
Gray-Hawley Mfg. Co. 85
Grout Bros. Auto Co. 52
Gumelastic Tire Co. 72

Hancock & Heller. 67
Ham Mfg. Co. 63
Harburg Tire Co. 49
Hardy Co., The R. E. 58
Harrington Lubricant Co. 48
Harris Oil Co., A. W. 76
Hartford Rubber Works Co. Cover
Hartford Suspension Co. 93
Hatcher Auto Parts Co. 71
Havoline Oil Co. 49
Haynes Automobile Co. 52
Healy Leather Tire Co. 48
Heath Dry Gas Co. 49
Heinze Electric Co. 79
Hercules Electric Mfg. Co. 49
Herschell-Spillman Co. 48
Herz & Co. 59
Hess-Bright Co. 51
Hicks Speed Indicator Co. 99
Hoffecker Co. 62
Hoffman, Geo. W. 49
Holley Bros. Co. 87
Holsman Automobile Co. 61
Hopewell Bros. 63
Hotchkin Mfg. Co. 58
Hotel Albany 68
Hotel Chalfonte 67
Hotel Cumberland 68
Hotel Greenbrier 69
Hotel Lafayette 69
Hotel Niagara 67
Hotel Rudolph 69
Hotel Schenley 68
Hotel Touraine 68
Hotel Wentworth 69
Huntington Automobile Co. 53
Hydraulic Pressed Steel Co. 51

Idium Metal Co. 70
Indestructible Steel Wheel Co. 70

Jackson Automobile Co. 52
Jeffrey & Co., Thos. B. 115
Jersey Brake Co. 63
Johnson Sporting Goods Co., I. 53

Kalamazoo Spring & Axle Co. 51
Kimball Tire Case Co. 63
Kirkham Motor Mfg. Co. 49
Konigslow, Otto 51
Lamberjack & Co. 82
Lavelette & Co. 73
Lavigne Mfg. Co. 71
Lear Automobile Co., Oscar. 52
Leather Tire Goods Co. 54
Limousine-Carriage Mfg. Co. 54
Lindsay, Jr., A. M. 50
Lipman Mfg. Co. 50
Lobee Pump Co. 50
Locke & Co. 66
Locomobile Co. of America. 103
Logan Construction Co. 47
London Auto Supply Co. 66
Long Mfg. Co. 61
Long & Mann Co. 49

McCord Mfg. Co. 60
Malone, F. E. 67
Manhattan Electrical Sup. Co. 70
Manhattan Lamp Works. 76
Manhattan Storage Co. 60
Maple City Mfg. Co. 61
Martin, Walter C. 61
Martini Import Co. 105
Marvel Motor Car Co. 104
Mason, John A. 54
Mason Motor Car Co. 102
Matheson Motor Car Co. 106
Mayo Radiator Co. 50
Merritt Co. 50
Midgley Mfg. Co. 51
Miller Bros. 54
Miller, Chas. E. 77
Mitchell Motor Car Co. 52
Moline Automobile Co. 52
Moon Apex Brake Co. 73
Morgan & Wright 89
Mosler & Co., A. R. 64
Moss Photo Engraving Co. 75
Motz Clincher Tire & Rubber Co. 47
Motor Car Equipment Co. 74
Muller, Albert 50
Mutty Co., L. J. 54
Myers Auto Top Co. 54

National Brake & Clutch Co. 106
National Construction Co. 56
National Motor Vehicle Co. 110
National Oil Pump & Tank Co. 50
Neustadt Auto & Sup. Co. 85
New Process Rawhide Co. 71
N. Y. Sporting Goods Co. 50
N. Y. & N. J. Lubricant Co. 95
No-Match Electric Mfg. Co. 48
Nordyke & Marmon Co. 52
Northern Motor Car Co. 110
Nuttall Co., R. D. 51

O. K. Connector Co. 48
Ofeldt & Sons 49
Old Colony Light Co. 49
Olds Motor Works. 52
Oliver Instrument Co. 71
Ovington Motor Co. 48

Pantasote Co. 54
Pacific Tucking & Mfg. Co. 48
Packard Electric Co. 48
Packard Motor Car Co. 116
Parish & Bingham Co. 51
Parker, Stearns & Co. 70
Pease & Sons, S. A. 54
Pedersen Mfg. Co. 49
Penna. Auto Motor Co. 102
Pfanstiehl Elec. Laboratory. 66
Picrome Hide Co. 50
Pierce Engine Co. 99
Pierelli & Co. 88
Pioneer Brass Works. 51
Pittsfield Spark Coil Co. 63
Pope Motor Car Co. 111
Post & Lester Co. 49-55-72
Powell Muffler & Timer Co. 50
Precision Appliance Co. 73
Prest-O-Lite Co. 94
Progressive Mfg. Co. 85
Prosser & Sons, Thos. 51

Quinby Co., J. M. 54
Quincy, Manchester, Sergeant Co. 55

Raimes & Co. 49
Rainier Co., The 53
Raino Co. 89
Ranger Motor Works. 99
Reed & Co., Geo. R. 70
Reeves Pulley Co. 70
Reliable Dayton Motor Car Co. 103
Remy Electric Co. 50
Renault Freres 105
Richardson Eng. Co. 59
Robert Instrument Co. 48
Roberts Motor Co. 49
Rose Mfg. Co. 64
Ross Gear & Tool Co. 51
Royal Battery Co. 75-86
Royal Equipment Co. 49
Royal Motor Car Co. 99
Rushmore Dynamo Wks. 76-77

St. Louis Car Company. 109
St. Louis Motor Car Co. 52
Salisbury Wheel Co. 49
Samson Leather Tire Co. 58
Schraeder Sons, A. 93
Shawver Co. 63
Skinner & Skinner. 76
Smith, Crary & Davidge. 56
Smith Mfg. Co., R. H. 97
Snow, H. N. 54
Speed Changing Pulley Co. 53
Spicer Universal Joint Mfg. Co. 49
Splitdorf, C. F. 62
Sprague Umbrella Co. 102
Springfield Metal Body Co. 54
Springfield Portable Cons. Co. 65
Standard Battery Connection Co. 55
Standard Co. 78
Standard Connecting Rod Co. 62
Standard Roller Bearing Co. 49
Standard Welding Co. 91
Stanley, John T. 78
Steam Carriage Boiler Co. 51
Stearns Co., F. B. 112
Stewart & Clark Mfg. Co. 83-55
Streit Machine Co. 55
Stitch-in-Time Vulcanizer Co. 58
Success Auto Buggy Co. 53
Sullivan Oil Co. 93
Supplementary Spiral Spring. 58
Swinehart Clincher Tire Co. 85
Syracuse Alum. & Bronze Co. 51

Teel Mfg. Co. 55
Thomas Motor Co., E. R. 107
Thompson, J. P., Sons Co. 54
Timken Roller Bearing Axle. 98
Trade Directory 77
Traver Blow-Out Patch Co. 62
Trident Tire Co. 50
Triumph Motor Car Co. 104
Tucker, C. F. 48
Turner Brass Works. 76

U. S. Fastener Co. 62
Uncas Specialty Co. 74

Veeder Mfg. Co. 80

Walker Carriage Co. 54
Walker Co., E. C. 64
Walker Co., Geo. H. 50
Warner Instrument Co. 108
Warner Pole & Top Co. 54
Weber Co., O. F. 48
Weed Chain Tire Grip. 88
Welch Motor Car Co. 53
Western Malleable Steel Co. 51
Western Tool Works. 102
Weston Elec. Instrument Co. 55
Wheeler & Schebler. 101
White Co., The 114
Whitlock Coil Pipe Co. 50
Whitney Mfg. Co. 66
Willett Eng. & Carbureter Co. 65
Winchester Speedodometer Co. 61
Wing, Chas. 54
Winton Motor Carriage Co. Cover
Winton Motor Carriage Co. Cover
Wyckoff Lumber & Mfg. Co. 78
Wyman & Gordon Co. 47

York Motor Car Co. 52

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